Southwestern Medicine

OFFICIAL ORGAN OF
ARIZONA STATE MEDICAL ASSOCIATION
NEW MEXICO MEDICAL SOCIETY
EL PASO COUNTY (TEXAS) MEDICAL SOCIETY
THE MEDICAL AND SURGICAL ASSOCIATION
OF THE SOUTHWEST

Volume XV | November, 1931 | No. 11

ANNUAL SUBSCRIPTION $2 | SINGLE COPIES 25 CENTS

Entered at the Postoffice at Phoenix, Arizona, as second class matter.
"Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized March 1, 1921."

THE RELATION OF THE EYE TO GENERAL DISEASES*

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(Read before the New Mexico Medical Society, at its Forty-Ninth Annual Meeting, at Albuquerque, N. M., May 20-22, 1931.)

The important relation between opthalmology and medicine in general is not always realized; the value of an ophthalmoscopic examination of the fundus in suspected brain tumor is fully appreciated by most neurologists, but the aid that may be rendered in other conditions is often overlooked. Many times some general disease is discovered by the careful ophthalmologist in his routine examination of cases of refraction. This is especially true in cardiovascular diseases, nephritis, brain tumor, multiple sclerosis, diabetes, and a host of other diseases. In the introduction of his book, "Medical Ophthalmoscopy", that was published in 1879, Gowers wrote: "The ophthalmoscope is of use to the physician because it gives information, often not otherwise obtainable, regarding the existence of disease elsewhere than in the eye." Yet how few physicians have mastered the technic of the use of this simple method of examination.

The ophthalmoscope should be in more common use than the sphygmomanometer, for it gives more accurate information regarding the state of the blood vessels, in addition to throwing light on other obscure conditions. With the modern electric ophthalmoscope the technic is not difficult; even a young child can be taught to use it, even any physician, with a small amount of practice, can master its use without a demonstration by an expert. There are difficulties, however, in learning to interpret the normal fundus from the abnormal. One of my medical friends who limits his practice to obstretrics and pediatrics, once said to me that the ophthalmoscope was an indispensible instrument in his branch of work because it had helped him recognize conditions that he otherwise would have overlooked. He knows little about the rare conditions that often occur in the macula and other parts of the fundus, but he can differentiate between the normal and abnormal, and, when in doubt, can ask for help from the ophthalmologist. With a small amount of reading and the routine examination of every patient's fundus, a physician may soon become familiar with the normal fundus. If he observes carefully the optic nerve, blood vessels, color of the retina, and so forth, it will not be long before he will notice abnormalities. Then, with the study of a few simple works on the subject, he may familiarize himself with the abnormalities of the eye grounds that throw special light on diseases with which he may expect to be in contact. This much can be done without special graduate study.

The ophthalmoscope is not the only ophthalmic instrument that throws light on general diseases. The perimeter and other instruments for the examination of the visual fields are of great value in uncovering certain pathological conditions. These, however, have a limited field of usefulness and belong to the field of ophthalmology. The internist should be familiar with the confrontation method that often uncovers grave changes; he should also know how to test the pupillary reactions and be acquainted with action of the extra-ocular muscles.

Toxic goiter with exophthalmus is one of the most striking examples of a general disease with obvious ocular manifestations. The characteristic staring expression that follows the protrusion of the eyeballs

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was first described by Dalrymple and is called Dalrymple's sign. With the protrusion of the eyes, winking becomes less frequent—Stelwag's sign. When the eyes are turned downward, the upper lid fails to follow the eyeball—Graefe's symptom; and, in severe cases, the act of convergence becomes difficult—Mobius' sign. When these symptoms are associated with tachycardia, tremor, a high basal metabolism rate, loss of weight, and so forth, the diagnosis becomes easy. A unilateral protrusion of an eyeball may occur in goiter, especially in its early stage; this symptom, however, is usually the result of tumor, inflammation in the orbit, cavernous sinus thrombosis, and other diseases accompained with masses in the orbit. In xanthomatosis, exophthalmus occurs, but the disease could hardly be confused with exophthalmic goiter.

In goiter the protrusion of the eyeballs may assume alarming proportions. The cornea may ulcerate from exposure and require suturing of the eye lids or a tarsorrhaphy.

Campbell found exophthalmus present in 93 per cent of 110 cases of toxic goiter, and in Dock's seies it occurred in about 70 per cent of the cases.

The cause of the exophthalmus in toxic goiter is not definitely known. Some contend that it is due to an increase in the amount of fat in the orbit, and others think it results from edema of the orbit, and it may be due to a combination of both. Extreme congestion of the orbital blood vessels has been advanced as a cause, but this hardly seems likely, because in many cases there is no engorgement of the retinal veins. Spasmodic contraction of the unstriped muscle of the orbit from sympathetic nerve stimulation has been proposed as a cause. None have been definitely proved, but from postmortem studies it seems that it is due to a combined edema and increase in the amount of orbital fat.

After exophthalmus, the most conspicuous ocular symptom of general disease results from palsies of the extra-ocular muscles. Ptosis, or drooping of the upper eyelid, occurs after paralysis of the elevator muscle of the upper lid. Ptosis may be unilateral or bilateral and must be differentiated from the congenital, traumatic cases of pseudoptosis that occur in trachoma, tumors and edema of the eyelids. True ptosis is due either to lesions in the nerve trunk, nucleus of the third nerve, or in the cortex. When associated with paralysis of other ocular muscles, the lesion is usually in the nerve trunk, but a massive lesion in the third nerve may produce the same condition. When cortical in origin, the ptosis is not associated with paralysis of any of the other ocular muscles and is unilateral. Syphilis is the most frequent cause, excepting in the acute from associated with ophthalmoplegia, when alcohol, lead and carbon monoxide poisoning should be suspected. Ptosis is also seen in botulism, encephalitis lethargica, diphtheria, influenza, and other infectious diseases; in diabetes, disseminated sclerosis, progressive paralysis, and a few less common conditions.

In paralysis of the cervical sympathetic, the syndrome of Homes occurs. There is a partial ptosis with contraction of the pupil, flushing of the face, and increased perspiration on the affected side that is due to engorgement of the blood vessels. Pressure from tumor masses in the neck or enlarged lymphatic glands, is the usual cause.

External rectus paralysis, if bilateral and complete, is usually associated with basal diseases; if bilateral and partial, it is usually due to tumor within the brain substance. Unilateral paralysis may be due to exposure of the nerve trunk to cold, or the diseases mentioned as causing ptosis.

Ocular palsies also occur from orbital abscess, cellulitis, or tumors from fracture of the skull. Botulism, diabetes, tabes, encephalitis lethargica, multiple sclerosis, polioencephalitis, diphtheria, meningitis, syphilis, brain tumors, bulbar paralysis, pressure from sclerosed vessels or aneurisms, and occasionally lead poisoning, are among the general diseases in which ocular palsies are seen.

Diplopia is the most annoying symptom of ocular palsies. It is noted when the gaze is directed in the field of action of the paralyzed muscle and the distance between the images increases as an attempt is made to turn the eyes in that direction. Objectively, the observer notices a lag in the movement of the affected eye as the eyes are turned toward the paralyzed muscle. In cases of long standing, the affected person learns to suppress the image of the affected eye, and the diplopia disappears. Dizziness and confusion accompany the diplopia. If an elevator muscle is paralyzed, a compensatory torticollis may develop. After the affected muscle is localized, it is easy to determine the nerve supply and decide the location of the lesion. In tabes, the nuclei in the floor of the fourth ventricle are usually involved. The same is true for multiple sclerosis, encephalitis lethargica, botulism, and other conditions.

Abnormalities in lateral movements, without paralysis of individual or groups of muscles, occur in lesions of the cerebellum, pons, or association centers.

Paralysis of vertical movements of the eye is usually due to lesions in the anterior part of the oculomotor nuclei or lesions in the corpora quadrigemina.

Nystagmus is due to several causes. When not congenital or of vestibular origin, it may indicate lesions in the cerebellum, or cerebellopontine angle, or an affection of the fibers gong to Deiters' nucleus; it occurs in encephalitis lethargica, syringomyelia, Little's disease, idiocy, and in certain poisoning.

In recent years a study of the visual fields has played an important part in recognizing the location of lesions in the brain. Well-informed neurologists are aware of its importance and are demanding painstaking studies of the visual fields for this purpose. Uhthoff wrote, in 1900: "In no nerve territory is functioned testing elaborated to such extent as in connection with the optic nerve." Through the visual fields precise knowledge is often obtained that cannot be found by any other method.

Defects in the field may be divided into four groups:

(1) Those due to diseases of the eyeball, viz., glaucoma, chorioretinitis, optic neuritis, optic atrophy, and so forth. These are usually independent of general diseases. (2) Those due to lesions of, or to the effect of pressure on, the visual tracts or centers in back of the eyeball. (3) Those due to the absorption of toxins (toxic amblyopia). (4) Functional. The first is of interest only in making a differential diagnosis.

The second group are of extreme importance. Pituitary disease, for example, is often discovered first by the ophthalmologist. The patient consults him first because of poor vision that he thinks might be corrected with new glasses. While examining the patient, the ophthalmologist becomes aware of the fact that the poor vision cannot be attributed to an error of refraction; he may have found some abnormality in the appearance of the optic nerve, but, on taking the fields of vision, he discovers some abnormality—usually a defect in the temporal fields. General symptoms of pituitary disease are looked for and an x-ray of the skull requested. If an enlargement of the sella turcica is found, the diagnosis is established.

Tumors of the pituitary body, through pressure on the crossed fibers of the inner aspect of the chiasm, cause bitemporal changes in the fields of vision. The hemianopsia may be partial or complete. In advanced cases the whole field may become destroyed and atrophy of the optic nerve occur. Homonymous hemianopsia or altitudinal defects may be present when the chiasm is pushed upward and the carotid arteries put on the stretch. Monocular blindness occurs if the tumor is directed to one side only.

Homonymous hemianopsia is half vision on the same side of the visual field. When it is partial in the beginning and progresses, it should suggest an abscess or tumor in the temporal lobe on the opposite side of the brain from the defect in the visual field. Vascular lesions, i. e., embolus, hemorrhage or thrombus in the vessels that supply the optic radiations, may be the cause. This is especially true when the onset is sudden. When symptoms come on gradually and are progressive, the cause is either an abscess or tumor of the brain. The associated general symptoms, when combined with hemianopsia, aid greatly in accurately localizing the lesion.

Frontal lobe disease and tumors are frequently associated with central scotomata in the early stage and blindness with optic atrophy, on the side of the tumor, in the later stages.

In injuries of the occipital lobe, field defects are usually present. Their position in the field aids in localizing the eaxct position of the injury. Since the world war, our knowledge in this field has been greatly enlarged.

Chronic intoxication with tobacco and alcohol occasionally involves the maculopapillary bundle of nerve fibers and produces a central scotoma. If discovered early and the toxins eliminated, recovery may take place; in chronic cases, the visual defect may become permanent.

Quinine in large doses may cause blindness. Doses of three grams or less have produced optic atrophy. Ethyl hydrocuprein, or optochin, may produce a similar condition.

Blindness after the ingestion of wood alcohol may be sudden and complete; vision may return for a short time, but is eventually lost when the nerve becomes atrophic.

Lead, Filix mas, atoxyl, potassium chlorate, acetanilid, oil of wintergreen, pomegranate root, nitrobenzol, and the inhaling of the fumes of exploded dynamite, may produce toxic amblyopia.

Xanthomatosis, liporeticular disease (Shiller-Christian's syndrome), a disease due to faulty fat metabolism, may be recognized by the peculiar appearance of the orbits and the position of the eyes. The eyes seem large and bulging from their sockets; there is an associated change in the bones of the body with the formation of xanthomaplacques. Shiller thought that the condition was due to a disease in the brain near the tip of the third ventricle.

THE PUPILS

The importance of the pupils to general medicine is well known to all. The Argyll Robertson pupil in locomotor ataxia and general paralysis, is generally recognized. In this condition the pupil reacts to convergence, but not to light. The fact that it occurs, occasionally, when syphilis is not present, is not as well known as it should be. Argyll Robertson pupils have been reported in encephalitis lethargica, disseminated sclerosis, tumors in the region of the third ventricle, and so forth.

Irregular and unequal pupils are often present in neurosyphilis. They may be present in other conditions; for example, pressure of tumors or enlarged glands on the sympathetic nerves. The Horner's syndrone, which has been mentioned, is an instance. Unilateral blindness causes inequality of the pupils.

The importance of the pupils in the various stages of anesthesia and other forms of intoxication only needs mentioning.

Interstitial keratitis is an inflammation of the stroma of the cornea that is characterized by the presence of opacities, the appearance of blood vessels in the corneal stroma, marked photophobia and lacrimation, and subjective symptoms. The disease occurs mostly in the young and, in the great majority of cases, is due to congenital syphilis. Hutchinson's teeth, saber shins, and other stigmata of the general disease, are usually found after careful examination.

The foregoing pages have been confined to manifestations in the eye that could be recognized by external examination. We shall now turn our attention to the intro-ocular manifestations of general disease. I shall begin by discussing the more common conditions and later mention the others.

There is no place in the body, where the state of the blood vessels can be studied during life under satisfactory magnification, as well as in the eye. In the fundus the small arterioles can be distinctly seen if the refracting media are cleared. Abnormalities of the blood vessels may be recognized in the very early stage of arteriosclerosis. It is not unusual for the ophthalmologist to be the first person to discover this disease, in the course of routine examination of the patient preparatory to refraction. Every internist, as was stated in the first pages of the paper, should be sufficiently familiar with the use of the ophthalmoscope to study the ocular blood vessels and recognize this abnormality. The appearence of the retinal vessels gives one an insight into the condition of vessels in the brain and in the body in general. Sclerosis occurs first in the arteries; it manifests itself by an increase in the brilliancy in the central light reflex. As the vessel walls become more rigid, the blood column becomes smaller and the arteries seem to be contracted. They then compress or kink the veins, to a varying degree, at the crossings. As the disease advances, the terminal arterioles becomes tortuous, and resemble corkscrews. In more advanced cases, the caliber of the main trunks varies in size. The compression of the veins by the arteries also becomes more pronounced and, in advanced cases, a marked change in the direction of the trunk of the vein after it passes under the artery, takes place. In late cases, the blood column becomes threadlike and the walls of the arteries are streaked with white, the so-called pipe-stem sheathing. Small round and flame-shaped hemorrhages and whitish or yellowish exudates, occur in the retina. The exudates and hemorrhages are usually small in size and are located chiefly in the posterior pole of the eyeball near the macula; they are absorbed slowly, some may remain unchanged for months. The prognosis for the tenure of life is uncertain; some live a few, while others live many years. The prognosis is more grave when arteriosclerosis of the retinal vessels is associated with cardiorenal disease.

ALBUMINURIC RETINITIS

This is an exudative change that occurs in the retina in diverse conditions. It is seen most often, however, in the late stage of chronic interstitial nephritis and, when associated with it, should be called renal retinitis. Renal retinitis is a late manifestation of the kidney disease. It is probable that few cases that die in uremia escape some changes in the retina. The advent of renal retinitis during the course of a chronic nephritis, makes the prognosis grave. Few cases live longer than two and a half years after the appearance of the retinal lesions.

Since chronic interstitial nephritis occurs about twice as frequently in the male, the retinal disease is twice as common in him.

The blood pressure is usually raised when renal retinitis is present. But not all cases of renal retinitis have hypertension; there are cases of renal retinitis on record with low blood pressure.

The retinitis of pregnancy, when not associated with a chronic nephritis, is attended with a better prognosis than are the cases of renal retinitis. If labor occurs or the pregnancy is terminated, the retinitis may recover with little or no change in vision; and the patient may live for years. As a rule, the retinitis does not recur in subsequent

pregnancies. The retinal changes occur more rapidly and are much more severe in the cases of pregnancy than in the retinitis due to other conditions. Detachment of the retina is not uncommon, but it reattaches if the pregnancy is terminated. Hill, of Richmond, Virginia, reports a case of bilateral detachment of the retina that recovered normal vision after the termination of the pregnancy.

In general, the ophthalmoscopic changes that occur are the same in both conditions; they are exudates, hemorrhages, and edema. The exudates appear as white areas in the retinal tissue, that vary in appearance depending on their histological character and their age. The cotton wool or snow-banked patches, occur early; they are massive white exudates located in the retina near the posterior pole. They are often deposited in the inner layers of the retina and may be located in front of the blood vessels. The exudate is fibrinous in character. Their edges are not clearly defined and hemorrhages usually accompany them. In cases of longer standing, the exudates become less diffuse, smaller in size, and the edges more sharply defined. This appearance is due to hyalin and fatty degeneration of the fibrinous deposits.

Often the exudates in the retina arrange themselves in the form of a radiating star with the foveola of the macula in the center —the so-called macular star. This is most common in renal retinitis, but it may occur in the retinitis of arteriosclerosis and other conditions. The appearance is due to the accumulation of exudate between the radiating fibers of Henley that are located in the macular region. Exudates of this type may remain for long periods of time. White patches in front of the retinal vessels are sometimes seen in cases of long standing. These are due to degenerative changes in the axis cylinders of the nerve fiber layer. Blood vessels may show little or no change if arteriosclerosis is not present.

Papilledema may accompany the exudates in cases of so-called albuminuric retinitis, and, since headache and vomiting are not uncommon in renal disease, the swollen nerve may confuse one into beliveing that the papilledema is an indication of brain tumor.

After the absorption of exudates from the retina, pigmentary changes occur. They can be seen with the ophthalmoscope occupying the posterior pole of the eyeball. They remain permanently. The exudates may remain for long periods of time, especially in the cases where hyalin or fatty degeneration has taken place.

OTHER RETINAL MANIFESTATIONS OF GENERAL DISEASE

Hemorrhages and exudates occur in the retina in leukemia and pernicious anemia; in the former, the color of the blood in the vessels becomes pale, but it is not changed in the latter. The hemorrhages are usually found surrounded by a halo of white exudate. The color of the blood in the vessels changes to yellowish or chocolate color in some forms of diabetes. This form of lipemia retinitis is usually seen in the late stages and is due to a high fat content in the blood. It is transient in nature and it may be seen only over a short period of time.

Optic atrophy from secondary anemia is not uncommon. This is a form of primary optic atrophy; the disc becomes chalky-white and blindness may result. The size of the blood vessels is not affected.

DIABETES

Diabetes is attended with varied complications in the eyes. From twenty to thirty per cent of the cases of diabetes in persons over fifty years of age, show eye complications. Their appearance does not necessarily indicate the grave prognosis for life, as is the case in renal retinitis. The affections of the fundus and crystalline lens are associated with visual impairment. Cataract is the most frequent eye complication; it comprises about one-third of the eye complications; retinitis is next and is seen in one-fifth; optic neuritis, palsies of the ocular muscles; changes in refraction, iritis, vitreous opacities, optic atrophy, thrombosis of the retinal veins, changes in the color of the retinal blood, retrobulbar neuritis, and hemorrhagic glaucoma are among the other complications.

Sudden changes in the accommodation and refraction should always excite suspicion of diabetes; hyperopia may increase or myopia develop. It is probably due to changes in the index of refraction of the lens.

When cataracts occur in elderly persons, it is often difficult to determine whether they are senile in character or due to the diabetes. When they occur in the young diabetics, they are usually bilateral, develop rapidly, and are of the soft variety. The prognosis after operation is good, if the diabetes can be controlled and if no changes have occurred in the fundus.

Diabetic retinitis usually occurs in cases of long standing and is due in most instances to changes in the blood vessels or nephritis. In typical diabetic retinitis, Hirshberg found no edema and the exudates were well defined and usually located between the upper and lower temporal vessels. They were smaller in size than the renal variety and had irregular or notched edges. They never form

the star-shaped figure that occurs in renal retinitis. Hemorrhages of varying size and location occur; in severe cases, they rupture the hyaloid and diffuse into the vitreous, and become organized into bands of scar tissue.

Retrobulbar neuritis is associated with changes in the visual field; at first there is a central scotoma which may persist for a long period of time or become permanent. Optic atrophy and blindness may occur.

In lipemia retinitis, the color of the blood in the retina changes to a chocolate color or may become bright yellow or milky in character. This is due to a high fat content in the blood. It is usually seen in advanced cases, often in the stage of coma, and is more frequent in young persons.

PAPILLEDEMA OR CHOKED DISC.

Papilledema or choked disc is one of the very important symptoms in tumor of the brain. It is characterized by haziness of the margins and swelling of the disc and is due to edema. Ophthalmoscopically, the edges of the disc are blurred and seem to blend with the surrounding retina. The surface of the disc is elevated, the vessels pushed forward, the veins are dilated and tortuous. The arteries and veins seem to tumble over the edge of the elevated disc and reappear at a different level on the surrounding retinal surface. Hemorrhages are usually present on the disc and in the retina. There are no whitish exudates or streaking of the arteries. Any elevation of the disc of three diopters or more above the surface of the surrounding fundus, is said to be a papilledema.

Conditions that increase the intracranial pressure are frequently accompanied with swelling of the optic nerve. The swelling of the optic nerve is usually bilateral, but may be greater on one side. The side of maximum swelling does not necessarily indicate the side on which the intracranial disease is situated. Tumors of the frontal lobe, or tumors and inflammation of the orbit, are exceptions to this rule. Diseases of the orbit are easily excluded because of their characteristic local symptoms.

In Uhthoff's large series of cases of papilledema, he found chocked disc in the following percentages:

Brain tumor	71.0%
Cerebral syphilis	12.0%
Brain tuberculoma	3.6%
Brain abscess	2.2%
Oxycephaly	2.2%
Nephritis	1.1%
Tuberculous meningitis	1.1%
Lead poisoning	0.3%

Lawford and Edmunds called attention to the fact that papilledema is invariably severe in tumors of the cerebellum, and mild or absent in tumors of the cortical areas.

The relative absence of papilledema in cerebral hemorrhage and softening of the brain is of value in differential diagnosis.

High degrees of papilledema may be present with little or no involvement of the visual acuity. In long-standing cases, optic atrophy usually occurs and the vision becomes blurred or lost.

In all cases with papilledema, the visual fields may be of great assistance, as has already been emphasized.

OPTIC NEURITIS

Optic neuritis, with little swelling of the nerve, may accompany tumors of the brain. It is characterized by the appearance of white or grayish exudates in the substance of the optic nerve and along the blood vessels. Small flame-shaped hemorrhages are also seen. The exudates and hemorrhages are often confined to the disc, but they may extend into the retina, when the condition is termed neuroretinitis. The cause is usually syphilis; however, other forms of inflammatory disease, such as meningitis, and so forth, may be the cause. Optic neuritis is occasionally seen in brain tumors. The vision is invariably affected, the fields of vision become contracted, and blindness eventually results, following atrophy of the optic nerve. The disc becomes chalky white, the vessels contract, and the outline of the nerve head becomes indistinct.

OPTIC ATROPHY

Primary atrophy without a preceding neuritis or papilledema, occurs in locomotor ataxia, general paresis, and other forms of neurosyphilis. The disc in these cases is bluish-white in color, the vessels remain unchanged, and the margin of the disc is distinctly seen.

One must differentiate the simple atrophy of the optic nerve of glaucoma from the forms just described. This should not be difficult, because in glaucomatous atrophy the disc is excavated or cupped.

DISCUSSION

Dr. D. O. BROWN, Santa Fe: I have enjoyed Dr. Finnoff's paper very much and should like to ask him as to the best method of examining the fundus. Also, if there is any distinctive movement of the eye that goes with post-syphilitic Parkinson's syndrome. This last winter I learned of a boy who had a little trouble which dated back to the end of the war. It appeared he had a retrospasm of the eye and the eyeball would go around and around and finally turn up. After I finally worked the case out as post-syphilitic Parkinson's syndrome, under proper treatment the muscles of the eye cleared up.

Dr. S. D. SWOPE, El Paso, Texas: I am very much interested in Dr. Finnoff's paper and think that people engaged in neurology or psychiatry can hardly do without the ophthalmologist. It is my

routine practice to send all cases to an ophthalmologist and ask his report, and sometimes the ophthalmologist sends his cases to me for some light on nerve conditions or on the matter of diagnosis of the condition he finds. I am doing quite a lot of work in the public clinics, where we have the advantage of good ophthalmologists to check our cases, and there are very few cases we do not send over to them to check. Sometimes we get reports which are not entirely in accordance with our suspicions of the case, but usually they are of very great advantage to us in making our diagnosis. To facilitate matters and check up on the clinical course, I bought an ophthalmoscope and tried to learn how to use it, and have succeeded very well in most cases. One of the unusual things I have run up against, which was very simple to the ophthalmologist but not to me, was the peculiar pigmentation of the nerve in dark-skinned people. I examined a little Mexican child sent to me and when I looked into her eye thought this was a little different from anything I had seen. The matter of the change in the activity of the muscles of the eye in Parkinson's syndrome is very interesting. Not very lnog ago one of our ophthalmolcgists sent me a man who could not read. He tried to fit him with glasses and, while a very able man, was unable to arrange any kind of lens that would help him to read at all. He would be able to see the first letter, but all the balance of the letters would run together. He had that peculiar cogwheel expression of the muscles which went with the masked face and paralysis agitans, as a part of his Parkinson's syndrome. I discovered the trouble and took him back to the ophthalmologist, who agreed with me in regard to it.

Dr. G. W. GRISWOLD, Roswel: I want to compliment Dr. Finnoff on the very able manner in which he has covered an extensive subject, and, speaking from the standpoint of erroneous diagnosis, recall the case of a young man, about thirty years of age, who had a very severe double lobar pneumonia, in which my colleague assured me only three small doses of ethyl hydrocuprein had been given. Within 24 hours the dimness of vision of which he complained became total and he had no light perception for fully thirty days, after which it gradually returned and he recovered. This is the only case of this kind that I have ever seen.

Dr. FINNOFF (closing): In answer to Dr. Brown's question as to the best method of examining the fundus, I think it is better to use the method that appeals to you most and the one you can master. The direct method has advantages over the indirect, in that you can see the minute changes that are not visible with the indirect method. A comparison might be made in the use of the low power of the microscope with the high power. You get a higher microscopization with the direct than with the indirect method. With the ophthalmoscope, it is very easy to master the examination of the fundus, especially with some of the newer frames, and the fundus can be satisfactorily examined with undilated pupil. In Parkinson's disease, one occasionally finds a rotary of mixed nystagmus. It is possible, with a ptosis and a mixed nystagmus, it might be due to a nucleus, which has possibly occurred from some lesion in the cerebellum. There is a marked difference in the pigmentation in persons with light complexion from those of dark skin. Those with dark complexion have more pigmentation and the contrast is very striking. The case of bilateral neuritis that followed ethylhydrocuprein may possibly have been an optic neuritis from the pneumonia and not due to the other. Usually cases of quinine blindness are permanent.

THE BACTERIOPHAGE IN THE TREATMENT OF PYOGENIC INFECTIONS OF SKIN

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(Delivered before the El Paso County Medical Society, El Paso, Texas, Oct. 12, 1931.)

The bacteriophage is a living ultramicroscopic principle which multiplies at the expense of normal living bacteria of the strain for which it possesses virulence. In doing this the bacteriophage causes dissolution of the bacteria.

D'Herelle in 1916 discovered the principle of bacteriophagy and demonstrated microscopically the bursting of the bacteria cells, apparently from pressure from within, during the process of bacteriolysis. He thought the ultramicroscopic bacteriophage bodies entered the bacteria to cause their dissolu tion from within.

The bacteriophage filtrate is prepared by introducing a small quantity of the lytic principle into an alkaline bouillon culture of the organism for which it is virulent. This is followed, in from 24 to 48 hours, by the complete dissolution of the bacteria and consequent clearing of the medium. The action of bacteriophage is specific, a race of this principle having been isolated which causes lysis of the dysentery bacillus of Shiga, another race which is virulent for the typhoid bacillus, still others which are virulent for streptococcus, colon bacillus, staphylococcus, and several others. A race of bacteriophage has been isolated, and is now obtainable, which is virulent for all strains of staphylococci. The bacteriophage is usually used alone in treatment, for the reason that it acts best upon normal bacteria, in the absence of antiseptic preparations.

The action of bacteriophage is twofold: (1) by the dissolution of the infecting organisms, (2) by stimulation of the specific resistance, due to the presence of the lysed bacterial substance in the filtrate.

The bacteriophage may be injected subcutaneously, at a distance from the lesion or directly into the lesion, or may be used as a wet dressing. As a rule, two or three injections are sufficient. If improvement occurs at all it occurs in two or three days. To be sure that one is using a bacteriophage race of maximum virulence, the causative organism may be grown in bouillon and inoculated with the bacteriophage to be used. The virulence is determined by the rapidity and extent of dissolution of the bacterial suspension, in other words, by the clearing of the medium.

Since a race of phage is obtainable which

is virulent for all strains of staphylococci the bacteriophage has been of considerable value in the treatment of staphylococcus infections. Excellent reports of this work are available in the recent literature by Larkum, Crutchfield and Stout, Alderson, Kahn, and others.

My experience with the staphylococcus bacteriophage has been with a stock preparation. In some cases the beneficial effect has been quite striking; in a number of others, it has been of apparent benefit; while, in a few cases, it has been entirely negative.

In furunculosis and carbuncle, it is usually of such great benefit that it should be the first treatment considered. In the acute stage it should be injected at a distance from the lesion, but after a pus cavity is formed, a small amount of the filtrate may be injected into this.

In acne it is of benefit only in those cases in which there is considerable evidence of staphylococcic infection. The types composed principally of comedones and papules are not influenced by the bacteriophage to any extent.

Pyodermia, sycosis vulgaris, and pustular folliculitis respond to the staphylococcus bacteriophage.

A few brief case reports will illustrate the prompt results obtained in some of the cases. As stated before, the results have not been uniformly successful, but it is evident that the bacteriophage has possibilities in the treatment of pyogenic infections.

Case 1. H. E. B. Recovering from carbuncle, about an inch and a half in diameter, on left side of neck. In spite of good drainage and application of antiseptics, there remained a small sac which continued to exude about two drops of pus on pressure, when dressed daily, for two weeks. There was still considerable infiltration about the lesion, forming a firm mass the size of a chestnut. On July 14, 1931, ½ cc. staphylococcus bacteriophage was injected into the pyogenic sac and at various points in the infiltration. On July 16 no pus could be expressed, but only a small drop of serosanguineous material. At this time ½ cc. was again injected as before. On July 18, the lesion was perfectly dry and the infiltration was much less and thereafter rapidly disappeared. This result was quite rapid and striking.

Case 2. Miss E. R. Consulted me February 10, 1931, for severe indurated acne of the face and shoulders. She received yeast internally and fractional x-ray treatments for three months, including three filtered treatments. Most of the lesions had disappeared, but a large cystic lesion on the left cheek persisted and recurred after drainage. On June 30, 1931, ¼ cc. staphylococcus bacteriophage was injected into the lesion. During the following three or four days it disappeared and has never recurred.

Case 3. H. S. Had been treated with x-ray for severe acne vulgaris, at intervals, for several months. On August 31, 1931, most of the acne lesions had healed, but a large cystic pustule persisted on the back of the neck. One and one-half cc. staphylococcus bacteriophage was injected into the arm and ¼ cc. directly into the cystic lesion. On September 2nd, the lesion was smaller; at this time it was incised and drained and again the bacteriophage was administered as before. On September 4th, the large cystic lesion had disappeared.

Case 4. F. C. Severe indurated acne of the face, with marked seborrhea. Had received several x-ray treatments, with moderate improvement. The pyogenic infection was not a prominent feature of this case, but on July 23rd there were several large, deep, cystic pustules. One cubic centimeter of staphylococcus bacteriophage was injected into the arm. On July 25th these lesions were definitely smaller and similar dose of bacteriophage was given at this time. The patient returned July 30th for observation, at which time the cystic pyogenic lesion had practically disappeared. The last injection, however, had caused a severe local reaction and, as the patient had tuberculosis, no further injections were given but x-ray treatment was resumed. After this the acne improved very gradually, just as it does under x-ray treatment, but there have been no pustular lesions of consequence. As such lesions are usually slow in disappearing, I feel that the bacteriophage was of benefit.

Case 5. E. L. Presented very large pustular lesions scattered over the legs, especially about the knees. The lesions were somewhat indurated and covered with thick crusts. Diagnosis: Pyodemia On September 3, 1931, 1½ cc. staphylococcus bacteriophage was given subcutaneously into the left arm. On September 5th, there was much less pus in the lesions. At this time 1½ cc. of the phage was injected into the right arm. On September 7th, there was still further improvement and 1½ cc. was given in the left arm. On September 11th, the lesions has practically disappeared and the patient was discharged.

SUMMARY

1. The bacteriophage is a living principle which causes dissolution of the bacteria for which it is virulent, multiplying at the expense of these bacteria.

2. It is specific in its action, a given race of the phage causing lysis of only certain bacteria, or in some cases only one or more strains of a species.

3. The polyvirulent staphyloccoccus bacteriophage, being virulent for all strains of staphylococci, has a place in the routine treatment of pyogenic infections.

This is a brief report, but it is hoped that it will stimulate interest in this new branch of bacteriology which seems to have almost unlimited possibilities for good.

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SOURCES OF INFANT MORTALITY IN THE WESTERN STATES

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(Read before the New Mexico Medical Society, at its Forty-Ninth Annual Meeting, at Albuquerque, N. M., May 20-22, 1931.)

In the course of a remarkable address, delivered more than half a century ago, Disraeli, far-sighted English statesman, advanced the opinion that the chief concern of a nation is the health of the people. The great empire he represented so well has translated this maxim into such concerted intelligent action that its distant dominions of Australia and New Zealand have had for a generation the lowest death rates in the world. In America, especially in this western America, while we recognize more clearly than ever before, in spite of the materialistic creed that has developed in our midst, that we are in a very real sense "our brother's keeper", no vibrant public health conscience has disclosed itself. Especially in the domain of preventive pediatrics have our achievements been relatively negligible where, from every consideration of helpfulness and dependency, they should have been most conspicuous.

It will come as a distinct shock to the thinking public of these intermountain states to learn that this favored region, "sitting eternal in the sun" and blessed by the Creator with so many other privileges and advantages denied sister commonwealths to the east, has the highest infant mortality in this country. The surprise is complete when we recall that here, where plain and mountain meet, we have a maximum of sunshine, the highest index of ultraviolet light, the lowest humidity, a population almost entirely native born; in general, good water supplies and, in most districts, a carefully supervised milk supply. There are practically no congested tenement districts, no great number of women gainfully employed, no sweat shops, no special health hazards, such as malaria, hookworm, and pellagra.

With an average infant death rate in the registration area of 66 per thousand live births, Wyoming reports 70, Colorado 91, New Mexico 145, and Arizona 133. The incongruity of the situation, not to stress its more serious aspects, is apparent when we find ourselves attempting to capitalize our climate and to proclaim the region as a health resort! Intelligent parents have learned to appreciate the value of statistics in determining the salubrity and the hazards of a given area; when they find it twice as dangerous for a baby to be born in our district as in another, that most elementary of instincts, protection of the young, will determine the matter with decision and promptness. Leading medical and sociological groups in Denver, with complete cognizance of the situation and of the inconsistencies involved, finally succeeded in initiating an intensive study of infant and maternal mortality, to continue from March 1, 1930, to March 1, 1932. The civic significance of the survey may be determined by the fact that it is sponsored by the Public Health Council comprising delegates from thirty-three professional and lay groups of Denver, including the County Society, the City and State Health Departments, the Chamber of Commerce and the Denver Sanitarium Association. Funds, to the extent of $30,000, were made available for the prosecution of this investigation through generous bequests from the Rockefeller Foundation, the May Company, the City Administration and several anonymous gifts. The chief subsidy was secured through the Bureau of Business and Social Research of Denver University, School of Commerce, whose Department of Statistical Research has complete control of the tabulations now under way.

The objectives of this serious study were, first, to determine if the mortality figures released by the census bureau were correct and, second, to determine if possible the factors which are contributing to a death rate which from every view-point is abnormal. If, for example, not all births are recorded (and this fact was established early in our survey) then the actual death rate would be reduced in direct proportion to the unreported births. While a few physicians have been remiss in this essential to vital bookkeeping, it is refreshing to note that complete cooperation of the profession, as well as of hospital superintendents, nurses, and patients, was extended in this occasionally irksome inquiry. Dr. Kaplan reports that "out of the total number of cases interviewed, exceeding 5,000, only eleven instances of resistance from patients or physicians were encountered. In virtually every one of these difficult situations, it was eventually possible to obtain a substantial portion of the information called for by the exhaustive questionnaire covering more than 150 items."

It appears to be the most comprehensive review of this character ever attempted in the United States, and it has aroused genuine interest among state and national health workers. Aside from the inaccuracy of birth figures immediately uncovered, the study has already presented many interesting fea-

tures. An analysis of the mortality data by districts, for example, reveals a striking concentration of deaths along the Platte River valley, this shallow stream running through the city near its northwest boundary. Here may be found thousands of shacks unfit for habitation, without sanitary conveniences, many with dirt floors, and with a population largely unemployed throughout the colder months. The mortality rate in these areas runs from 106 to 183 infants per thousand live births, while in the better districts, such as Park Hill, it is as low as 19. Here is a weakness which may be controlled: uninhabitable houses should be demolished and the population of this section be transferred to a more salubrious neighborhood where the city might well adopt the system now employed so extensively in Berlin, Vienna and other European centers and erect model tenements for its poorer citizens. In addition to unsanitary environment, the survey has clearly shown that economic conditions are a direct factor contributing to morbidity and mortality at the threshold of life. In families with an annual income of $3,000 or over, the death rate is 30 per thousand live births; with $2,000, the rate is 54; with $1500, it is 57; between $1,000 and $1500, it is 96; and for family incomes under $500, the rate is 170. The age of the mother is a well-recognized element in determining both infant and maternal losses. Among mothers under 20 years of age, the infant death rate was 118 per thousand; with mothers 20 to 25 years old, it was only 73; while, with those from 35 to 45, it was 121.

Confinements in the hospital sustained a mortality of 75.7 per thousand, while those in the home had a death rate of 95.4. It will be seen therefore that accouchements conducted in the home are a potent agent for increased mortality. Nor is this all. The study has shown, as expected, that prenatal care and advice, either in the clinic or at the hands of the private physicians, are vital aids in the saving of the newborn. Where no examinations had been made before delivery, the mortality was 178; with one or two consultations, it dropped to 158; with three or four visits, to 118; with five or six, to 81; with seven or eight, the death rate was only 24; and with nine or more visits, it reached the surprising figure of 15. This study embraced all economic groups.

In our work a very disquieting situation presented itself with respect to the age at death. In the registration area of the United States, and in the age group "under one month" of those babies who do not survive, the number dying during the first day is 15.3 per thousand live births: in our survey it was 32.7—a difference of 17.4. While it will demand careful inquiry over the entire period to interpret these findings, it would seem probable that registrars of vital statistics do not usually include as viable such babies as succumb immediately after birth. Figures from one day to the end of the month conform closely to the average for the country at large.

In this connection it should be noted that many women are confined by midwives, mostly ignorant and wholly untrained. The menace from this source will continue as large as the profession is quiescent and as long as laws for the control of irregular practice remain unenforced.

No consideration of death rates in these sparsely settled commonwealths can long exclude the factor of industrialism. A large migrant population is responsible for a very appreciable increase in our mortality, as shown by the survey of conditions in our sugar industry, made independently by the U. S. Department of Labor, The National Child Labor Commission, the University of California, the Colorado Agricultural College, and by numerous private agencies. It is officially recorded that in 1929 there were 20,000 Spanish-speaking laborers in northern Colorado and 4,000 sugar-beet workers in other sections of the state. Including Russians, there were about 30,000 persons employed, in a sense, as contract laborers. Much of this, of course, was child labor, as revolting as it is illegal, since compulsory school laws must be openly violated to permit children between the ages of six and fifteen to be gainfully employed. The result is an appalling death rate among women and children. In one group of 286 contract families, 187 lost 443 children, or 2.37 per family, some losing as many as nine children. In the Arkansas Valley, one group of 140 families with 1079 children showed a loss of 308, or 28.6 per cent. Flocking to large cities at the end of the season, these families swell the population of the slums, their money is soon exhausted and in many cases they become a public charge. The problem, therefore, of the migrant laborer, his care and the care of his family, demands solution.

No extensive investigation of mortality rates in this intermountain region can ignore the preponderant influence of tuberculosis. For more than half a century our territory has been the mecca for individuals, young and old, suffering from the great white plague. As a matter of fact it is questionable whether permanent settlement would have followed the passing of the hunter and the prospector without the contri-

butions of the health seeker, which have everywhere converted desert areas into busy, wholesome communities. The arrested case, apparently well but with the margin of vitality notably diminished, often makes a poor parent. Where both parents have a tuberculous history, the chances are even greater that their offspring will be lacking in physical capital; in any event, most of them will be artificially fed and their handicap still further increased. It is recognized that bottle-fed babies have a much higher death rate than those who are breast fed. If open tuberculosis is present, the newborn is exposed to a still more serious menace. So, with both the soil and the environment present, we must reckon on this extra hazard among many families where otherwise the infant would have every prospect of survival.

Further sources of our unfortunate rating with respect to losses in early life, are gastro-intestinal disorders, respiratory affections, and birth injuries, whose control must rest largely with our State Boards of Health and a more acute sense of obligation on the part of the practising physician. Certainly, if we neglect the expectant mother or deny her and her baby those measures of protection which science and humanity have built up through the ages, we have failed in a duty as vital as it is immediate and we have broken faith with the finest traditions of the race.

DISCUSSION

Dr GEORGE P. LINGENFELTER, Denver, Colo. Dr. Amesse is to be congratulated on his very interesting portrayal of an appalling condition. It is quite true that this death rate is dependent in a large proportion on the economic status of the family, but another thing we must remember is that, as a rule, this type of family is the most prolific we have. Generally it is among this class of people that cases of smallpox, leprosy, and other contagious diseases are found. Dr. Amesse spoke of diphtheria. Formerly, a great many did die from this disease, but we are getting away from it now to a very considerable extent. We have developed a method of treatment for the diphtheria carrier, who was responsible for many cases of acute diphtheria, and with this treatment we have had most excellent results. I think perhaps the only cases that do not respond to it are those in which the diphtheria bacillus has infected the sinuses. Were the nose and throat cleaned out, with no other abnormalities present, we would now be able to clear up all diphtheria carriers.

Dr. J. R. EARP, Santa Fe: I have been very much interested in this subject and have enjoyed Dr. Amesse's paper immensely. I have no doubt but that the Department of Statistical Research of the Bureau of Business and Social Research of the Denver University, which has complete control of the tabulations in connection with the survey, will publish the results when completed. The higher death rate among the poorer classes, and especially the infant mortality, is only natural, because they receive less medical care and their housing conditions are insufficient. Some years ago a study was made at Johns Hopkins of the infant mortality rate according to age groups, and it was found in that study that the younger the mother was, the less risk there was for the mother and child. There is a considerable difference between that and the Denver experience, but possibly the younger Denver mothers were among the poorer class. The Johns Hopkins series was on a smaller number of cases, however, and then, in Denver, the high infant mortality in the first days of life was attributed to the fact that they consider it a live child as soon as it breathes. I will not stop to go into that controversy as to what constitutes a live birth. We could talk all day on that subject and then not get anywhere. In New Mexico, our problems are almost entirely rural. There is so much territory to cover that we do not know what the babies are dying from, as more than half of them are never seen by a doctor before they die.

Dr. S. D. SWOPE, El Paso, Texas: I have thoroughly enjoyed Dr. Amesse's most enlightening paper. Mortality such as has been shown to us here is certainly a danger signal which we should appreciate thoroughly. Most of our large cities have made some provision for these conditions—such as the lying-in hospitals of New York and San Francisco,—but in the smaller cities and towns up to the present time there is practically no provision made by which prospective mothers of the poorer class can have intelligent attention during the confinement. We in El Paso thought we had the matter solved, having a very large population of poor people living on the south side, with high mortality among the children, we decided that by building a new City-County Hospital, we could take care of the people of the community and be able to lessen the death rate in this particular class. It seems, however, that the American public is not ready for this advancement in the development of civilization, as we put this to a vote for a bond issue, but the people turned it down. I am sure that if it were put to a vote again at the present time, notwithstanding our financial depression, it would probably be carried. Our City Health Officer is making most strenuous efforts to improve conditions.

Dr. R. O. BROWN, Santa Fe: I have been more or less interested in the mortality rates of New Mexico, because I have been on the Board of Public Welfare. There are conditions in New Mexico which seem to make it absolutely impossible to guarantee a physician for every woman about to become a mother. I am wondering if any comparison has been made in Denver as to the death rates between women attended by physicians and those attended by midwives, and if there ever has been a correlation of the data on statistics as to what is considered a live birth and what is a still birth.

DR. C. F. MILLIGAN, Clayton, N. M.: Over in our district we have very poor people but our death rate is about the same as in other sections in the country. In my opinion, the high death rate is largely due to lack of education of the public and, perhaps, a lack of interest on the part of physicians in taking care of these cases. Many times midwives are engaged who can neither read nor write, and the doctor is not called in until something goes wrong, when it may be too late. We could possibly have more of these women taken care of by physicians, if we went about it in the right way, but many of the doctors are specializing and are not particularly interested in prenatal care.

Dr. R. W. MENDELSON, Albuquerque: We owe Dr. Amesse a vote of thanks for his very interesting paper. There is one difficulty in the way of educating the public, in that some people are too dumb to be educated. Therefore, they should be submit-

ted to race regulation. The death rate Dr. Amesse mentions calls to mind the death rate we have in the tropics, where in some places it runs as high as 400 and in others to 150 per thousand. In the City of Manila it is much less now, but for the whole Philippines it will probably run from 150 to 200 per thousand. Yet that is not so bad considering the fact that they are sitting on top of the equator. Comparing these death rates with the rate Dr. Amesse has called our attention to, it looks as if we are very lax in our own United States, with such a high degree of so-called civilization. I am very strong for taking this proposition of childbirth out of the hands of the midwife. If we could stop this class from the work of practising the healing art, we might get some place.

Dr. F. D. VICKERS, Deming, N. M.: I have been interested in looking into the records of the graduating classes of the various medical schools and can see more and more the passing of the family physician of the old days. Fully 50 per cent of the graduates of medical schools now fit themselves to become specialists, before leaving college.

Dr. AMESSE (closing): I am grateful for this generous discussion of the subject. In illustration of the tendency of young medical graduates to specialize, an incident happened at Denver College a week or so ago, that may be worth relating. Among the number of young men who expressed determination to become specialists was one serious-minded individual who, when asked his intentions, said he was going to specialize, and when asked in what, replied: "Well, since it looks as though everything else has been taken care of, I will specialize on the nostril." "Which one?" he was asked. The three most important things responsible for the high death rate are ignorance, poverty, and neglect. As to the question of Dr. Brown about the relative death rates of those cared for by midwives and those cared for by physicians, it is exactly the same. However, a midwife will carry a woman on to the point of death and then call in the doctor, so she is indirectly responsible. She will carry a labor case to a point where no man can save it and then call the physician. This is entirely an educational problem and when you cannot educate a person, then you are strongly inclined to use a club.

AVERTIN ANESTHESIA IN OPERATIONS ABOUT THE HEAD*

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(Presented before the El Paso County Medical Society, Sept. 14, 1931.)

For many years one of the major problems facing the surgeon called upon to operate about the head and neck, has been that of selecting a satisfactory anesthetic. Ether and other gaseous substances have been most unsatisfactory because of the mask's interfering with the field of operation and the danger of infection being carried into the wound by the anesthetist. Nitrous oxide and ethylene are particularly unsatisfactory in surgery of the mouth because of their transitory action, the patient recovering consciousness soon after the mask has been removed to allow manipulation. Further more, in surgery of the upper respiratory passages there is often considerable secondary pulmonary reaction which should not be aggravated by the use of an inhalation anesthetic.

Since the increased popularity of diathermy and cauterization in surgery, it has been necessary to search among the non-explosive substances for an anesthetic. This has been particularly desirable in head surgery, as there it is impossible to shield off the mouth to minimize the danger of accident. This, more than any other single factor, gave impetus to laryngologists in their search for a more satisfactory anesthetic agent.

Laryngologists have always been to the fore in experimentation with local drugs, but these in many cases have not proved satisfactory, due to the difficulty of obtaining adequate anesthesia, the severe shock in some of the more major procedures, and the great apprehension on the part of the patient.

Considerable work has been done with Gwathmey's[1] sup[2] synergistic method, which consists of intramuscular injections of morphine and magnesium sulphate supplemented with an enema of ether and paraldehyde in olive oil. In many cases this proved most satisfactory, but occasionally the patient remained refractory, relaxation was poor, and the danger of explosion when using the cautery, while minimized, was not totally eradicated. Also, the ether suspension proved very irritating to the rectum, in many cases leading to gross pathological changes. For these reasons this method has largely been discarded.

During the past five years, a drug has been placed on the market which seems to fulfil all the requirements as an ideal anesthetic in our field. This is tribromthonall, or avertin. This substance is administered by rectum, is non-irritative, is totally eliminated by the kidneys, does not to any extent alter blood pressure or respiration, has no deleterious action on the heart or lungs and in no wise interferes with the field of operation.

This drug was originated and extensively used in Germany[3] before its introduction in this country. Before 1928 over one hundred thousand cases were reported without adfatality, showing that, when properly administered, this is not attended with any more danger to the patient than are the more commonly accepted anesthetic agents. There is now available a rather extensive American literature on this drug, so I will not go into the pharmacology of the sub-

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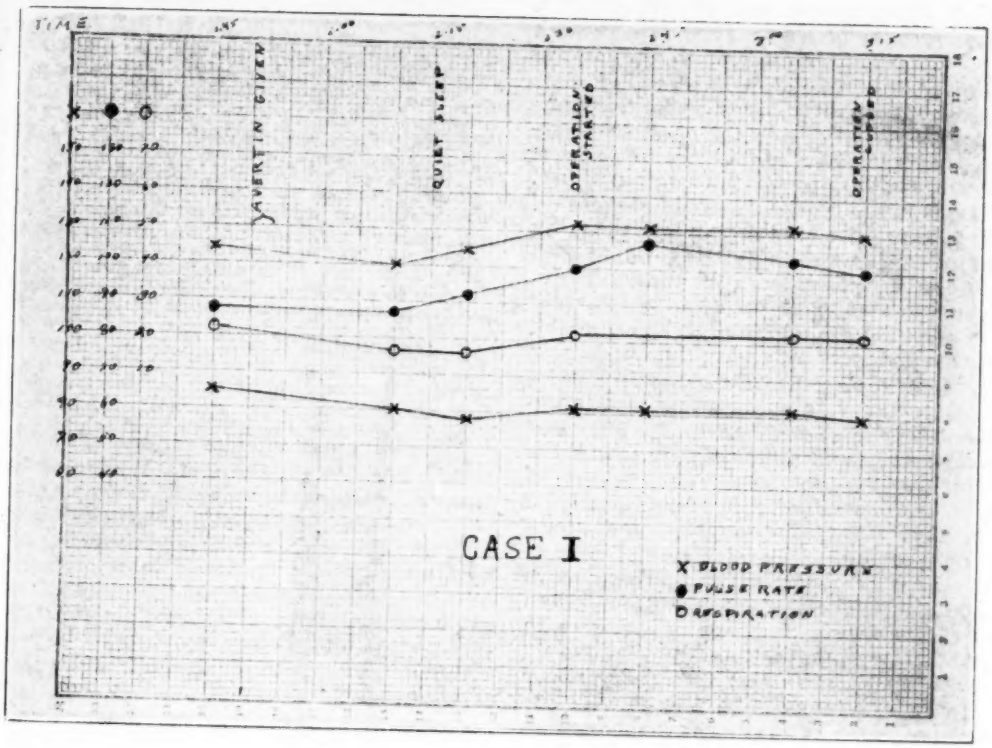
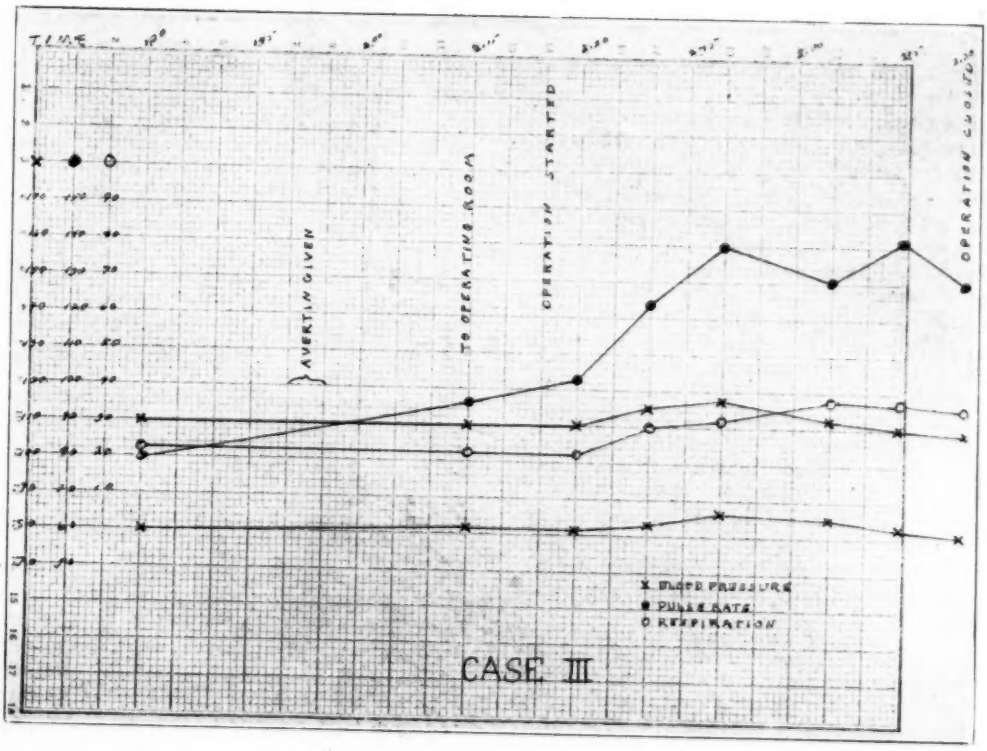

TIME
AVERTIN GIVEN
QUIET SLEEP
OPERATION STARTED
OPERATION CLOSED
CASE I
X BLOOD PRESSURE
PULSE RATE
RESPIRATION


TIME
AVERTIN GIVEN
TO OPERATING ROOM
OPERATION STARTED
OPERATION CLOSED
X BLOOD PRESSURE
PULSE RATE
RESPIRATION
CASE III

stance but will content myself with giving a general account of a few experiences which may prove of larger interest to the general surgeon and internist.

In our work with this drug, we experimented considerably, endeavoring to determine the smallest dose which would give good surgical anesthesia in the average case. Our early work was done with dosages of 90 to 100 mg. per Kg. of body weight. We found that this was not sufficient to give anesthesia in the majority of adults. Therefore, we gradually raised the dosage until we were giving 125 mg. per Kg. body weight. This was found to be the optimum dose in the majority of subjects. In certain cases it was necessary to use supplemental anesthesia, either local or ether; in the few cases in which this was required we found the amount to be very small, an average of around one ounce of ether sufficing for major operations. This usually was necessary only early in the operation and in most cases was soon dispensed with. This dosage is about twice the amount recommended as a basal anesthesia, but our object was to secure full surgical insensibility and not to discover some new form of preoperative medication.

We first used the crystalin avertin, but, as soon as it was made available, we substituted the 100 per cent solution in amylene hydrate, because of its ease of preparation. We were unable to distinguish any difference in the action of the two forms of the drug.

Elderly and cachectic individuals respond to much smaller doses of avertin than do healthy young adults. In such cases we obtained very satisfactory results using as little as 100 mg. per Kg. of body weight. Our poorest results were obtained in children, as they required very large doses and in many cases we could not get them anesthetized with the amounts we cared to give. We found that they required about as much ether to allow manipulation as if no premedication had been given. Because of the unreliability of the results in children, we early discontinued our work with them.

The diabetic is considered a very poor risk for surgery with the more commonly used general anesthetics. We had several cases in which a careful check of the blood sugar failed to show any changes following operation, which would suggest that avertin was harmful in this condition.

CASE REPORTS

Case 1. E. E., July 16, 1929. Mastoidectomy, an extremely rapid breaking down of mastoid in a severe diabetic, the whole process occurring in ten days.

1 p. m., morphine gr. ¼, atropin gr. 1/150.

1:50, avertin Gm. 6; 125 mg-Kg. Patient was asleep with perfect relaxation in ten minutes.

2:34-3:15, very extensive mastoidectomy, cells completely broken down and the tip sequestrated. Patient reacted on leaving table.

7:15, completely awake, slept well.

There was slight motion of the head during the initial incision, otherwise perfect relaxation and control. Respiration was unchanged throughout, the blood pressure varied less than ten points and the pulse rate went up fifteen beats during the initial incision, but rapidly fell to the preanesthetic level. Blood counts made before, immediately after operation, and next day, showed variations well within the bounds of experimental error. Convalescence was uneventful. Particularly noteworthy is the fact that the patient suffered no postoperative pain or discomfort and slept very comfortably the first night, without opiates. It is of interest to state that two years following this operation the other side became involved and another mastoidectomy was performed with avertin, giving just as happy results as in the first case.

Many patients, especially those of a neurotic temperament, are more in fear of the anesthesia than they are of the operation itself, and a certain amount of surgical shock may well be due to fear and fighting the anesthesia. Any substance which will produce surgical anesthesia in the quiet of the subject's room without his realizing the fact that he is becoming narcosized is a very valuable adjunct to successful surgery in such cases.

Case 2. A very neurotic woman suffering from repeated sore throats, showing hypertrophied tonsillar tags, refused to submit to operation under local and had previously had a very unpleasant ether anesthesia.

8:50, with no premedication, 7.32 Gms. of avertin were given rectally; the patient, being under the impression that it was only a cleansing enema, went to sleep in fifteen minutes.

9:15, tonsillar tags were dissected out; 10:15, patient reacted; 12:30, fully awake.

The blood picture showed no changes after operation. Bleeding was about the same as one encounters with ether and much less than with nitrous oxide. The patient awoke as from a normal sleep and stated that she had had no unpleasant sensations of any kind.

An operation impossible to do with local anesthesia and extremely dangerous with an explosive gas, is illustrated by the following case.

Case 3. W. W., male, 48 years. Squamous cell carcinoma of the external auditory canal.

1:15, morphine gr. ¼; 1:47, avertin 8.84 Gm.; 130 mg-Kg; 2, asleep.

2:35 operation started. Simple mastoidectomy to make sure of no bone involvement, the whole cartilagenous canal cut out and operative field burned out with the actual cautery.

3:30, operation closed; 6:45, patient reacted.

Blood pressure and respiration remained level, while the pulse rate rose to 130. The patient was completely anesthetic throughout the operation, not even reacting during the cauterization.

We had several cases of emergency operations in patients suffering from acute upper respiratory affections, which would have been extremely poor risks for inhalation anesthesia. Avertin used in these cases in no wise aggravated the pulmonary condition. We believe that this drug should find an ex-

tensive use in operations on tuberculous individuals, as it not only causes no insult to the lungs, but also avoids the extreme shock of local anesthetics in major operative procedures.

In several of our cases complete surgical anesthesia could not be obtained with the doses of avertin which we were using; in these, a small amount of ether gave immediate relaxation. Occasionally the subject would groan and appear to be in pain, but after recovery they all stated that they remembered nothing of the operation, often refusing to believe that there had been any surgery or that they had even left their room, the amnesia being much more complete than that obtained with large doses of scopolamine.

Blood pressure, pulse, and respiration readings were taken at fifteen-minute intervals during the operation and for some time before and after. It was noteworthy that they remained practicaly level, suggesting that this is an excellent agent to use in cases showing marked cardiac and vascular damage. The fact that the blood pressure does not fall with this drug is a large point in its favor over either spinal or sodium amytal anesthesia. Blood counts showed no alteration following the use of avertin.

We do not advocate the indiscriminate use of this drug in all anesthetics. Cases should be selected largely on the basis of contraindications for the ordinary agents. I have outlined above several conditions in which we believe this to be preferable to either ether or local. It is especially indicated in extensive procedures about the head where, either through interference with the field or chance of explosion, the gaseous anesthetics are dangerous.

In our series of cases, we discovered several factors which we consider to act as contraindications to the use of this agent. Children do not take kindly to avertin, they do not react well to the doses which we were using. Because the physiological action of this drug is very similar to that of ethyl alcohol we had little success in inducing surgical anesthesia in chronic alcoholics. Avertin is detoxicated in the liver and excreted by the kidneys, therefore we refrained from exhibiting the drug to subjects with gross damage of those organs. Following two unfortunate incidents in patients with marked laryngeal stenosis, who were deeply cyanosed and breathing with their accessory muscles, we decided that this drug should not be used in such cases, as it gives such profound anesthesia that it removes this accessory action and threatens the life of the patient.

The majority of work recently published suggests that avertin should be used only as a basic anesthesia, so used it serves a certain purpose in alleviating apprehension, and requiring the use of less ether. But in using it for this purpose the main advantages of the drug are eliminated. We attempted to cut down our dosage but found that the effect was not satisfactory. Our best results were obtained with a dosage of 125 mg. per Kg. of body weight. This is far below the experimental minimal lethal dose. The highest dosage which we have personally observed was 187 mg. per Kg. In this case anesthesia lasted for eight hours, at the end of which time the patient awoke as from a normal sleep and showed no ill effects from his experience. This gives us a larger margin of safety than obtains for several of the more commonly used anesthetics.

CONCLUSIONS

1. Avertin is indicated for anesthesia in many operations about the head which would prevent great obstacles to the successful use of the more common anesthetics.

2. The use of avertin is indicated in certain pathological conditions which contraindicate inhalation anesthesia.

3. Avertin may be used in doses sufficient to give full surgical anesthesia and yet retain an adequate margin of safety.

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DISCUSSION

Dr. J. L. GREEN: I believe it might be well to recall that on Nov. 8, 1930, in the American Medical Journal, there was a preliminary report by the Council on Pharmacy and Chemistry of the American Medical Association, which report was not entirely satisfactory. It stated they were delaying decision on the anesthesia because of several factors. It appeared that, after its introduction in Germany, there were quite a number of deaths reported and following severe criticism by numerous surgeons at a meeting of the Congress, it was temporarily withdrawn by the manufacturers. They showed that it depresses the respiratory center and has some bad effects on the liver. While it gives a beautiful basal anesthesia, it has added disadvantages in that the aqueous solution is prone to decomposition and this decomposition is, perhaps, the cause of some of the fatalities reported. It might be well to proceed with caution before we accept this or any new drug.

Dr. W. E. VANDEVERE: Dr. Palmer has done some very interesting work with this anesthetic. If it can be controlled, there are cases where it would be of special value, particularly in papilloma of the larynx. To remove such papillomas, I like

to use cautery, but do so with fear and trembling, on account of the ether. I saw Dr. Lynch have a couple of explosions doing this type of work and he finally began using an electric fan to fan away as much of the ether as possible and then did the cautery, but even then there is a certain element of danger. I wonder if Dr. Palmer has had any experience in using this anesthetic in cases of laryngeal growth.

Dr. PALMER: In answer to Dr. Vandevere, we had two cases in which laryngotomy was done under avertin, one of which was carcinoma of the larynx. The patient was in poor surgical shape to start with and it was most unfortunate. We have selected our cases since then. Wherever there is free airway, we feel perfectly safe in using avertin. With reference to the preliminary report mentioned by Dr. Green, I do not know why this was given out. The Council seemed to think the chief thing against the drug was that there had not been sufficient tests made. We did some of the earliest work in Chicago with the crystalline substance, which was brought from Germany. I do not understand exactly where they find the heart action is suppressed because all of our cases showed, if anything, there is a very slight rise in blood pressure. The fact that the substance deteriorates, or has been found to deteriorate, occurs only when made up in aqueous solution. We always test it in a solution of Congo red first and if there has been any deterioration, this would turn blue. In our opinion, avertin has a very valuable place in the hands of the surgeon.

A VISIT TO MAYO CLINIC

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(Read before the El Paso County Medical Society)

In a trip to Mayo Clinic via Chicago, on the Northwestern Railroad, one comes in contact with it upon entrance to the depot for the evening train to Rochester. There is a hospital car leaving the Northwestern Depot each eveing, which is cut out at Rochester and returns the following night. This car has been especially adapted by the Pullman Company for receiving stretchers through the side doors instead of through the vestibule or window, as formerly. Instead of the berths being on both sides of the car they are on one side, so, when the stretcher enters the side door, it goes directly into a compartment. These compartments have upper and lower, toilet facilities, and so forth.

Medical men who have reservations in this car have no trouble finding it, as, painted on the side, in the usual space occupied by the name of the car, is the simple name of Joseph Lister; not Lord Lister.

The first thing that strikes one who has seen the clinic grow almost from its beginning, is the present new office building—a magnificient structure, some thirteen or fourteen stories—which is the largest and most modern physicians' office building in the world.

On top of this office building is a set of very fine chimes that plays each evening and can be heard over the entire town. One of the bells weighs 7000 pounds, and they were especially cast in Scotland, a donation of art by the Mayo Builders to the home town and only one of the many donations showing their loyalty and affection for their homefolks.

All the downtown hotels and hospitals are connected by beautiful tiled subways, steam-heated, indirectly lighted, and full of signs giving you directions to find your proper destination—about one mile of subways. There are eight buildings, all told, connecting.

The mechanical conveniences of the new office building have made it possible for patients to get through the clinic in practically one-half the time it formerly took—for instance, there are mechanical carriers from the history room to all the floors of the building, whereby a history called for can be delivered in a matter of two or three minutes. These histories are kept going from department to department, as needed, without causing loss of time. Histories are carried from the filing room through pheumatic tubes to the various hospitals—to the main hospital, St. Mary's out at the edge of town, histories go in two minutes or less; to downtown hospitals it is only forty-five seconds.

The elevators in the new clinic building, after the door closes, give no sentation of moving. You are surprised after standing a few moments to be let out at the twelfth floor.

On the top floor of this building is a large assembly hall for use of staff meetings and other gatherings which may be appropriate.

A large painting of Dr. Will and Dr. Charles hangs on the wall in this room. Occupying the greatest place of prominence is a painting of their father, to whom, on every occasion, they give full honor for a great heritage.

Dr. Will and Dr. Charles, of course, still have offices in this building, but neither is engaged in active clinical operative work. In one of the approaches to Dr. Will's office, you go through the Directors' room, which contains a beautiful mahogany table surrounded by chairs for eight. It is here the Directors meet to discuss the institution's welfare.

The walls of this large room are completely covered by framed degrees of honor, diplomas and all sorts of honorary bestowals. They are from the King of England, down through practically all the foreign countries of the world; and degrees without end from all colleges of the world.

Passing from this room into a little hall leading into Dr. Will's office, is a smaller room with glass cases along the sides, such as display cases, containing caps and gowns of all sorts, kinds and descriptions, dozens and dozens, that they have worn during the ceremonies of having these degrees conferred—on one side are those of Dr. Will's and on the other side are those of Dr. Charles'.

Each evening at five o'clock as the Clinic's business closes, there is a tour through the building, accompanied by a guide; at least seventy-five peop'e composed the party the evening I went through. This is very appropriate for the visiting doctors as well as visiting patients, who have a desire to look through the building and to know something of its work.

The striking feature of the scientific surgical end of the clinic is that it is manned thoroughout by young men. When one sees these men do ten or twelve major operations in a day, one wonders how they can have physical strength to do this day in and day out; but few of them, if any, operate each day as a regular routine.

In the earlier days of the clinic, however, Dr. Will, Dr. Charles, Dr. Beckman, Dr. Judd, and others, did as many operations each forenoon every day, as well as put in the afternoons either operating or working in the clinic. In addition to that, they did much more teaching than the younger men are doing today, and this is made as a constructive criticism of the clinic.

During my recent visit at the clinic, Dr. Charles Mayo was away and Dr. Will Mayo appeared in the surgical clinic as surgical consultant. Dr. Charles also does this when he is at home. He comes into the clinic where the younger men are operating and is often told something of the problem they are up against in the particular operation. He still has the same capacity for clear thinking and statement of facts of practical utility.

In the surgical clinic one fails to observe any striking changes that have occurred in the past five years. There are, of course, numerous ones, but not in any way radical.

Spinal anesthesia is enjoying popularity there, just as it is over the entire country. I suspect, however, that it has reached its high point of popularity and will soon be on the decline. Of course, it is given there under the most favorable circumstances, by specialists who do nothing but give spinals, sacrals and locals.

At St. Mary's hospital, the largest, there are two rooms, in connection with the operating suites, where patients are taken to be given their spinals, sacrals, blocks and locals, and they are taken from there into the operating rooms. So, you see, their work is being done under the most favorable circumstances and, if it does not prove successful there, it could not possibly be successful elsewhere.

Dr. Judd made the statement that any anesthetic that would knock the blood pressure from 200, 190, or 180, suddenly down to 90, was not physiological and he could not believe that such a thing could occur without danger. I think this definitely marks the beginning of its lessened popularity.

They do sacral anesthesia on all hemorrhoid and rectal work and with the patient on the stomach in a reversed Trendelenburg position. This gives access to the rectum, both as to operating and examining with a speculum.

They have made very great progress in the x-ray of the sigmoid and colon by first giving barium enema, allowing it to pass, and then distending the colon with air. A stereoscopic picture is then taken. Polyps, early cancers and other ulcers, retain the coating of barium after the normal mucosa has been cleared, and these foci are brought out very clearly with stereoscopic picture.

Stereoscopic pictures of the sigmoid permit following loops of bowels very much better than in a flat picture.

Each operator has an operating suite of two rooms with two operating teams, so that he doesn't have to make the incision or close it. In this way he may do more operations. It seems that most of the operators are using wet gloves again; I did not learn the reason for this.

Some five years ago,during a visit of mine to the clinic, Dr. Judd was doing all of the reasonably clean cholecystectomies without leaving any abdominal drainage. He stated that, for some reason, these cases seemed to make better convalescence, but did not know why. During my visit this time I didn't observe a single gallbladder operation closed without drainage. Upon inquiry, I was told that drainage is regular routine now—that would seem the logical thing to do.

The long abdominal incision is established permanently, and dissecting the fat back on each side of the incision after the fascial layer is reached and before it is incised, prevents the fat from coming into the line of suture during closure. This seems to be a very important point.

In operation for cancer of upper rectum, left inguinal colostomy is always done, bringing the proximal end of the bowel down

into the opening and closing the distal end, leaving attached to the abdominal wall at the site of the colostomy. Some three weeks later, the section of the rectum is carried out from below, as far as possible, then the abdomen opened and the resection completed.

Dr. Mason does all his perineorrhaphies with catgut alone. He states that postoperative bleeding after hysterectomies practically always comes from uterine artery.

The removals of the lumber sympathic ganglions for arthritis and circulatory disturbances of the lower extremities, are beautiful operations when done by a perfect technician.

Dr. Adson and his assistants are doing work on the nerves and brain that is more difficult and technical than any other branch of surgery that I have observed.

I saw Dr. Craige do a lumbar sympathectomy operation on both sides at the same time and it was a masterpiece of surgery done in a masterly way.

I think the greatest advance is the greatly improved technic of surgery of the large bowel. Aseptic resection has proved entirely successful and reduced mortality very perceptibly. This is done by crushing clamps, doing all the cutting with a cautery, and making anastomosis with both openings in the bowel sealed; following the crushing, then cauterization, thereby making a complete aseptic anastomosis.

I didn't see a section of the sternomastoid muscle in any goiter operation while there, that is not done as a routine. I think a highly developed technic makes it possible without that step.

The Judd method of removing the gall-bladder beginning at the cystic duct, seems to be an adopted standard technic and is deviated from very seldom, though at times, in certain cases, it appears to the observer that the opposite technic would be more desirable, especially for the average operator.

They still have the most rapid method of getting reports on tissues removed. In one particular case, where a tumor of each ovary was removed, the report was back in four minutes, and both were malignant.

The clinic is still growing, the physical plant is constantly improving, and the group of operators are young, strong, enthusiastic hard workers, but one misses the teaching and, for that reason, a certain amount of inspiration that one received from the founders of the clinic.

As this is now a "world institution" it is to be hoped that this defect will be remedied and the clinic thereby may be able to give the greatest measure of its usefulness to the profession the world over.

COMMON MISTAKES IN THE REMOVAL OF FOREIGN BODIES IMBEDDED IN THE CORNEA

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(Read before the El Paso County Medical Society)

The object of this writing is to attempt to set forth certain mistakes which are frequently made in the ordinary case, consulting the general practitioner in the more rural districts or the ophthalmologist in the urban centers, with the complaint of having a foreign body in the eye. A simple commonplace occurrence in the daily office practice, yet, what we consider a very important subject. There is little doubt from observation of post-foreign-body cases, that the majority of us regard too lightly the removal of a small particle of foreign matter from the corneal surface. The result of this slight regard is a rough removal, with subsequent nebular formation which, if located over the pupillary area, may impair vision to a large degree. The majority of us relieve our feelings, if a scar formation occurs, by telling the patient that he delayed coming to our office too long, having developed, prior to his visit, a small ulcer which was responsible for this nebular formation. However, it has been our experience that the patient with a foreign body imbedded in the cornea wastes little time in consulting the physician or surgeon. There are certain definite principles which are given in all current books of opthalmology and which are known by all but which are not infrequently improperly applied. The problems which confront us when presented with a case of this type are:

1. (a) Impairment of vision. It should be a routine practice to take the vision of all patients complaining of a foreign body in the eye, before its removal. This is of importance in the prognosis as well as a precautionary measure for future reference. We see many contentious patients who, having had a small foreign body removed, complain of faulty vision following its removal and who, upon examination, show the same vision as before removal. This record prevents arguments and sometimes legal entanglements; whereas, if the vision had not been taken, we should have no record to prevent these. Should a patient be suffering a great deal of pain with blepharospasm and tearing, we suggest the instillation of two or three drops of 2 per cent holocaine before taking the vision. The reason for doing

this is obvious, as the tearing, blepharospasm, and so forth, would interfere with the vision to a marked degree. At this point ophthalmoscopic examination should be made to determine if hemorrhage, lens injury, and so forth, are present.

(b) The Composition of the Foreign Body. The most common foreign bodies are: sand, cinder, iron, coal, ashes, dust, wood, emery and steel. The composition is important from the standpoint of prognosis on the reaction of the eye to a foreign body. As we all know, steel particles or metallic particles of any kind are poorly tolerated by the cornea and

Fig 1 Single ulcer surrounding F.B.

Fig 4 Showing linear incision of cornea.

Fig 2 Infected ulcer with foreign body

Fig 5 Ring of oxidation surrounding metallic foreign body

Fig 3 Removing deeply embedded F.B. from cornea.

Fig 6 Showing tightly applied bandage.

even though the foreign body has been dislodged, if the metallic ring of oxidation is present, there is generally a very violent reaction. (Figs. 1, 2 and 3).

(c) The Contour of the Foreign Body and the Depth of its Penetration. The shape is important in the selection of the proper instrument for its removal. If it is circular and is imbedded only in the epithelium of the cornea, it is easily removed with a blunt foreign-body spud. However, if it is of irregular contour, a foreign-body gogue is the ideal instrument, as the V-shaped niche offers resistance and certain grasping power. If the foreign body has penetrated more deeply into the corneal layers, extending into the tunica propria, the removal is rendered more difficult and, of course, a thin foreign-body needle-knife is used. The purpose of this procedure is aimed at the conservation of corneal epithelium. Above all, the pernicious practice of attempting to wipe a foreign body from its position by means of a probe or applicator wrapped in cotton, is to be condemned. This procedure almost invariably results in the destruction of a large area of corneal epithelium and offers a larger port of entry for infection, whereby an ulcer of the cornea may develop. We see this demonstrated almost daily by some workman who has attempted such means of removal and occasionally is responsible for a large infected ulcer of the cornea.

(d) Whether or not there has been a Subsequent Ulcer Formation. This is of importance as a certain amount of necrosis of corneal epithelium takes place; which, of course, alters the prognosis as to the amount of scar formation which will result. In all foreign-body cases, but particularly in those of ulcer formation, strict adherence to the principles of asepsis must be observed. Metallic foreign bodies which have been embedded in the cornea for a period of more than six hours, usually become more or less oxidized, leaving a stained margin surrounding the ulcer following the removal of this foreign body. This should always be removed as it hastens healing to a marked degree. This oxidation product of the metal is toxic to the corneal epithelium. (Figs. 5 and 6).

2. The Use of the Proper Anesthesia. The choice of an anesthetic is a matter of vast importance. Never should an attempt be made to remove any foreign body, regardless of its size or position, without a proper and complete anesthesia. Cocaine and butyn, 2 to 4 per cent, are mentioned only to be condemned. We personally, have discontinued the use of these anesthetics, as we find there is a marked softening effect and dehydration produced, which is evidenced by generalized staining of the cornea when fluorescein is used following the use of the former. The anesthetic of choice and the one which we have found does not produce this effect, is holocaine, used in either a 2 or 4 per cent solution which is rendered alkaline by the addition of sodium bicarbonate. Instillation of two or three drops is made at minute intervals and, usually, complete anesthesia is produced with from three to five instillations. This anesthetic can be used more abundantly than can cocaine, as it does not produce any toxic effect. We have found it highly satisfactory in being free from the softening and dehydrating effect of the two formerly mentioned.

3. The Selection of the Proper Instrument for Removal. As mentioned earlier in the discussion, if the body is only imbedded in the epithelium, it is easily removed with a blunt foreign-body spud. However, if the foreign body is more deeply situated in the corneal structure, not reaching the posterior layers of the cornea, we suggest the use of the V-shaped foreign-body gogue, as this offers more resistance and therefore more grasping power. If the foreign body is located deep in the corneal structure, then, of course, the use of a foreign-body needle-knife facilitates the removal with less destruction of epithelium than any other means of removal. All these procedures are aimed to prevent destruction, primarily, of the corneal epithelium over a large area. This may be compared with the destruction of a large area of skin over the body surface necessitating a skin graft; whereas, if the wound is linear, regardless of its length, it heals rapidly and with little scarring. This applies to the corneal surface. If the wound can be sharply defined and is more or less linear in outline, there will be little scarring and the healing will be more rapid, as it does not necessitate extreme proliferation of corneal epithelium.

4. Staining and Instillation of Ointment. As to the matter of staining, we have found the use of 2 per cent solution of mercurochrome superior to fluorescein. It not only stains the denuded area, but, in so doing, prevents, to a certain extent, the subsequent infection. We find no difficulty in determining the degree of the abrasion by using this method of staining. The patient is given some ointment to be used in the eye at home and it is used in the office before the bandage is applied. We, personally, favor the use of 1/5000 bichloride of mercury ointment. It does not have the irritating properties of

the other antiseptic ointments. The instillation of ointment is a tedious procedure if carried out in the proper manner and it is important that it be retained in the cul-de-sac when the lids are closed, as this prevents the further denudation of the corneal epithelium by the movements of the globe beneath the closed lids. If the ointment is simply allowed to close, it is always pushed out of the cul-de-sac. However, if the cilia of the upper lid are grasped with the fingers and the lid pulled away from the globe, the ointment being instilled and the lids closed as in the removal of a speculum, the ointment will be retained in the cul-de-sac. Care should be exercised as to loose cilia falling into the cul-de-sac, as one loose cilium may destroy as much epithelium as the eye will be able to replace in twenty-four hours, resulting in a lot of irritation and discomfort to the patient.

5. Bandage. Regardless of the size, position or depth of the foreign body, one should insist on covering the eye for at least twelve hours. The reason for this is obvious. There is a denuded area of corneal epithelium which is susceptible to infection, irritable to light, and these apt to be increased by movement of the lids. The patch is the most commonly abused adjunct in the treatment of these cases. We prefer to use the term bandage, as patch is suggestive of incompleteness. The bandage should be applied so as entirely to immobilize the lids. If the bandage is loosely applied, allowing mobility of the lids, it is better to be without it, as the only effect, when applied in this manner, is to rub the cilia loose and push them into the eye. In applying the bandage properly, the gauze beneath must be thick enough so that it is higher than the brown margin. Adhesive strips are so placed as to slightly wrinkle the skin about the orbit, for if this is done, certainly, the bandage will be held firmly over the lids, allowing no movement of them. (Fig. 4).

6. Post-Foreign-Body Examination. Slit-lamp examination in post-foreign-body cases shows some extremely interesting phenomena. Cases which have been followed from the entrance of the body in the cornea to a period of from three weeks to three months following same, show definite corneal changes. If the body has been superficial and imbedded only in the corneal epithelium, little scarring remains, the only visible results being a slight disturbance of the stroma. If, however, the body was more deeply located in the stroma, there appears to be a large proliferation of connective tissue fibers, with some remaining capillary areas, and a certain amount of edema of the endothelium underlying it, which is present many weeks after all symptoms have subsided and the cornea appears entirely healed. If there has been ulcer formation either before or after removal of the foreign body with a protracted time of inflammatory reaction, microscopic vascularization takes place from the limbal loops of the conjunctival vessels penetrating deep into the stroma. Later, when the inflammatory reaction subsides and healing takes place, there seems to be a transformation of the capillary system into connective tissue. Whether this is a retrograde metamorphosis or not, it is seen actually to happen. Later, clear areas appear interposed among a sort of agglutination or scar-tissue patches in a checker-board fashion. These small areas give a definite "glint" resembling the so-called "calcareous inscrustations". In these cases the interstitial scar which, when newly formed, appears flattened and dense if observed by slit-lamp microscopy several months later, will show ectatic areas underlying which there is a marked thickening of the cornea producing corneal astigmatic errors. This ectatic formation has been explained as attributed to insufficient nutrition of the dense cicatricial tissue by the normal circulation of the cornea.

This subsequent traumatic corneal astigmatism, combined with the nebular formation, will produce grave errors in vision which may inhibit the recipient from obtaining a position with many of our modern industries where perfect vision is of primary importance.

Some may think this a very elementary subject, presented in a very elementary manner; yet, if I can only impres upon the profession the seriousness which may, and at times does, result from such a simple thing, then, I will feel that my purpose has been accomplished.

THE LABORATORY DIAGNOSIS OF SYPHILIS*

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*(Summary of an address before the Montefiore Hospital, Pittsburgh, Pa., April 8, 1931. Reprinted from the Journal of Chemotherapy for October, 1931. This article answers so many of the questions being constantly raised by clinicians regarding the laboratory tests for syphilis that it is reproduced here without abridgement.)

Syphilis is very prevalent in the United States, and since Spirochaeta pallida may attack any organ or tissue of the body, the disease may be encountered in every specialty in the practice of medicine. It has been

estimated that as many as ten million persons may have syphilis in this country, and it is a safe assumption that the majority either do not know that they have the disease or believe themselves to have fully recovered from it.

It is sometimes stated that the diagnosis of syphilis should not be made in the laboratory, but it is easily proven that in many instances, probably the majority, diagnosis can be made only in the laboratory.

The diagnosis of the chronic or primary syphilis is best made by dark-field examination of the secretions for Spirochaeta pallida. Volumes have been written on the clinical differentiation between syphilitic and non-syphilitic sores, but even the most expert and experienced physicians will make very regrettable errors on occasions if relying alone on clinical judgment. Small lesions masquerading as herpetic sores are sometimes syphilitic, and chancroids may be infected with Spirochaeta pallida as well. It is safe to state that no venereal sore should be finally diagnosed as non-syphilitic, until at least three dark-field examinations have proven negative for Spirochaeta pallida.

Primary lesions on the fingers, lips and other locations may readily escape clinical diagnosis and should be examined for syphilis upon the slightest suspicion.

For dark-field microscopical examinations, the patient should be brought to the laboratory so that small amounts of secretion may be obtained for immediate examination. If this is not possible, a drop or two of secretion may be collected by the physician in a small pointed capillary tube, sealed with vaselin (not with heat) and delivered within twenty-four hours for examination, as the spirochetes usually retain their motility for this length of time.

Diagnosis may be also made by submitting the secretion to the Kline microscopical precipitation test, or if 0.2 cc. or more can be collected, the Wassermann test may be conducted as described several years ago by Klauder and Kolmer.

India ink and stained smears of secretion for Spirochaeta pallida are much less satisfactory.

The early diagnosis of primary syphilis places a great responsibility upon the physician as accurate, diagnosis should be made as quickly as possible and treatment instituted without delay. Every clinical diagnosis of chancre should be confirmed and syphilis should never be excluded except with the aid of one or more of these laboratory procedures. In the order of accuracy and practical value, the author believes the latter may be listed as follows:

(a) Dark-field microscopic examinations.
(b) Kline miscroscopic precipitation test.
(c) Kolmer complement-fixation test with secretions.
(d) India ink or stained smears for Sp. pallida.

Late primary lesions with considerable healing may be unsatisfactory for these examinations. Likewise early lesions treated with antiseptics. All local applications should be omitted for at least 24 hours. One negative dark-field examination does not exclude syphilis; at least three negative examinations on different days are required.

The blood Kolmer-Wassermann reaction is not usually positive until the primary lesion has been present for 8 days. The same is true of the Kahn and Kline reactions. Therefore these tests are not usually of value in the diagnosis of primary lesions during the first five days. Certainly negative blood reactions do not exclude syphilis. But these tests should be made when the lesions are present for 8 to 10 days or longer. They are especially valuable in cases of healing sores present 2 weeks or longer, as at this stage they are positive in about 90 per cent of cases. But a single negative Kolmer-Wassermann, Kahn or Kline reaction at this time does not definitely exclude syphilis. The tests should be repeated one or more times at intervals of 5 to 7 days.

In secondary syphilis the Kolmer-Wassermann, Kahn and Kline reactions are positive in almost 100 per cent of cases. Clinical diagnosis may be difficult in some instances. Certainly syphilis should not be excluded in suspicious cases upon clinical grounds alone. The laboratory tests may confirm a diagnosis, may detect the disease when unsuspected or correct a mistaken clinical diagnosis. On rare occasions the first blood tests in secondary syphilis may yield negative reactions for reasons unknown at present; repeated tests, however, are almost invariably positive. The author has not as yet seen a case of secondary syphilis with repeatedly negative Kolmer-Wassermann reactions.

In the following or so-called "latent stage" the serum tests are of inestimable value in diagnosis. At this time clinical diagnosis may be, and usually is, impossible. A negative history does not exclude syphilis. Many individuals and especially women may never suspect the presence of the disease. Others may believe themselves to have been cured. Some recollect having had a venereal or extra-genital lesion which a physician has pronounced non-syphilitic. Fully 90 per cent give positive Kolmer-Wassermann reactions

and the serum tests should never be omitted if there is the slightest reason for suspecting syphilitic infection. A single negative does not exclude the disease.

Since latent syphilis may be encountered in the practice of every specialty in medicine and surgery, a routine serum test should be used more frequently than at present and especially in diagnostic surveys of individuals over 40 years of age. In hospital practice Wassermann tests are now usually conducted routinely on all ward cases, and for this reason these patients are usually more fortunate than private patients because of the greater chances of detecting unsuspected syphilis. It is greatly to be regretted that Wassermann tests are not conducted more frequently in private practice. If they were, there would be much fewer regrettable errors in diagnosis in high places.

It is extremely important to detect syphilis in the "latent" stage, because the institution of proper treatment may prevent the development of tertiary lesions. There is probably no true latency in syphilis as the infection is usually progressive in the internal organs and especially in the cardio-vascular and central nervous systems. It is better to call this the "concealed" stage of syphilis.

In tertiary syphilis the Wassermann and precipitation tests are invaluable aids in diagnosis. The percentage of positive reactions varies according to the sensitiveness of the tests and the skill of the serologist.

Weakly positive reactions should not be ignored. If the tests are properly done they may constitute the only definite evidence of syphilis at a time of golden therapeutic opportunity. They should be at least repeated. A great deal of harm has been, and is being done, by ignoring unexpected weakly positive reactions.

This is especially true of the Kolmer-Wassermann test which, when properly conducted, possesses an extremely high specificity for syphilis. The precipitation tests (Kahn, Kline, Meinicke, etc.) are much more likely to yield weakly positive non-specific reactions.

There cannot be any strict parallelism or co-relation between the serological reactions and the clinical condition of the patient, because symptoms depend upon the location of the infection while the strength of the serum reactions depends upon the numbers and activity of the spirochetes. A few organisms in the posterior nerve roots and posterior columns of the spinal cord may produce symptoms of tabes dorsalis while too few to produce enough antibody for yielding positive serum reactions. Or a large number of spirochetes in a tissue of lesser physioligical importance may produce strongly positive serum reactions with few or no symptoms.

All of the serum tests for syphilis are biologically non-specific as all employ alcoholic extracts of non-syphilitic tissues for antigens.

But all possess a very high degree of practical specificity as the only non-syphilitic diseases capable of yielding positive reactions are yaws, trypanosomiasis, leprosy and probably relapsing fever, which are rare or unknown in the United States.

A great deal of the literature indicating the possibility of positive Wassermann reactions in scarlet fever, tuberculosis, cancer, pneumonia and other diseases in non-syphilitic individuals, is now obsolete because based upon defective technic.

The great majority of falsely positive Wassermann reactions are due to regrettable and avoidable errors in technic.

Some methods are fundamentally wrong and cannot give satisfactory results regardless of the skill with which they are conducted. Others are fundamentally correct but cannot give satisfactory results in the hands of unskilled and careless technicians. Physicians often commit the very regrettable mistake of entrusting the serum tests for syphilis to inexperienced technicians. Incalculable harm is being done by this careless practice.

Unfortunately none of the serum tests for syphilis are sufficiently sensitive; all give a percentage of falsely negative reactions, especially in "latent" congenital syphilis and marital syphilis of child-bearing women.

The mechanism of complement-fixation and precipitation in syphilis would appear to be fundamentally the same, but the tests cannot be expected to yield exactly similar results under present conditions. A serum may give a positive Wassermann and a negative precipitation reaction or the reverse.

Therefore, the serum diagnosis is best served by testing each serum for the Wassermann and one of the precipitation procedures. Either test alone leaves about 5 to 10 per cent chances of error.

The precipitation tests are more likely to yield falsely positive reactions, than the Kolmer-Wassermann reaction. They are technically simpler, but required as much skill, especially in making the readings.

The complement-fixation and precipitation reactions in syphilis are due to Spirochaeta pallida, and are reactions of infection

rather than of immunity. This means that the antibody occurring in the blood and spinal fluid responsible for the reactions probably does not play any important part in resistance to the infection.

For this reason these reactions are valuable guides in the treatment of syphilis. In the author's opinion no case of syphilis with persistently positive reactions can be regarded as cured, regardless of clinical condition. A single negative reaction is not a criterion of cure. The reactions should be persistently negative for at least 2 years after the cessation of treatment and the author believes that every patient should have a Wassermann test at least once a year for 5 to 10 years thereafter and probably for the balance of life. Under these conditions relapsing infections occurring one or more years after cessation of treatment, may be detected and proper treatment instituted months and years before clinical manifestations become apparent.

Quantitative Wassermann reactions are especially valuable as a guide in treatment. Insofar as diagnosis is concerned the reactions need be reported only as positive or negative, but in treated cases a measure of the degree of complement-fixation is desirable. If tests are conducted with only one or two tubes the reactions cannot be quantitative. For example, a serum before treatment may give a 4 + reaction; after treatment it may still be 4 + despite the fact that the amount of antibody has been materially reduced. A quantitative test employing different amounts of serum or spinal fluid detects the difference and gives information of more value in relation to therapy.

While the luetin skin test is not, strictly speaking, a laboratory test, yet it may be briefly referred to. Luetin prepared of cultures of Sp. pallida is not as reliable as luetin prepared of tissues containing large numbers of spirochetes. These "organ luetins," as employed by Hollander and that prepared of the syphilitic testicles of rabbits by Kolmer and Tuft, are capable of yielding specific reactions sometimes of practical value in diagnosis, especially of prenatal (congenital) syphilis.

An examination of the cerebrospinal fluid should always be included in the diagnostic survey of latent and tertiary cases of syphilis. Occasionally spinal fluid changes are found when the blood tests yield negative reactions and especially in incipient tabes dorsalis. Even when the diagnosis is established by clinical and Wasserman examinations, the fluid should be examined, because if positive results are observed the therapeutic program should be arranged to meet the conditions. And no case of syphilis should be discharged as cured without at least one spinal fluid examination. If positive findings are observed, the fluid should be re-examined at intervals after courses of treatment. No cases of syphilis with positive changes can be regarded as cured.

In examinations of cerebrospinal fluid, the following tests should be conducted:

(a) Total cell counts done immediately after collection, if there is no blood.

(b) Protein tests, if there is no blood; the Pandy is preferred.

(c) The Wassermann test; the presence of a trace of blood does no harm.

(d) The colloidal gold test, if there is no blood.

The colloidal gold test is especially valuable if the reagent is properly prepared. A curve of the zone I type, like 5555432000, is especially significant as it is characteristic of paresis and may establish the diagnosis of incipient paresis long before this is possible by clinical examination. Any individual whose spinal fluid gives a reaction of this kind under proper technical conditions is in grave danger and should receive vigorous treatment. In other types of symptomatic and asymptomatic neurosyphilis, the curve is usually of the zone II type, like 1234421-000; this is indicative of neurosyphilis of any type other than paresis and is especially found in tabes dorsalis.

RETINAL VASCULAR SYSTEM

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(Read before the Arizona State Medical Association, at their annual meeting in Nogales, Arizona, April, 1931)

Despite the spectacular advance of modern laboratory methods, the practice of medicine is still an art and not wholly a science. The disposition to over estimate laboratory investigations is overdone. It is to be pointed out that the patient's body is really the most splendidly equipped laboratory in the world, affording a truly superior opportunity for study of its biochemistry. Physician and patient are living beings in which purely clinical investigation of the patient, in association with personal experience, knowledge, and even intuition, is of vast importance in the matter of arriving at a proper diagnosis.

It is quite the rule that, in contributions found in literature concerning cardiovascular cases, every possible laboratory test will be performed and accurate clinical observations noted, but not a single reference

made as to the findings on the fundus oculi-they are simply ignored.

Physicians do not dispute the value and advantage gained by the proper use of the ophthalmoscope, yet, due to an apologetic bowing to the instrument, as though it were deified, it is avoided by the medical profession except for a number of eye physicians. The latter do not always use it to its utmost limitation.

Together with the sphygmomanometer, the ophthalmoscope is invaluable in the clinical study of the cardio-renal-vascular system. The purely mechanical interpretation of arterial tension is utterly inferior in importance to the precise clinical information gained by a careful prolonged study of the retinal vascular system with the ophthalmoscope. With this instrument very valuable information is obtained regarding the transparency of the media-cornea, lens, and vitreous-together with all forms of vascular abnormalities, retinitis, exudates, hemorrhages and gross changes. Our particular subject under discussion in this contribution is the retinal vessels. Many eminent investigators have contributed much to our store of knowledge concerning this interesting topic. Marcus Gunn, a pioneer, has probably been the most outstanding, with Bull, Knapp, Foster Moore, Bailliart, and also de Schweinitz. The last has contributed valuable information with a description of his "corkscrew" vessels.

For the purpose of careful and thorough ophthalmoscopy, certain essentials are quite necessary. The examination should be carried on in a darkened room, the patient properly seated, with the unexamined eye fixed on a distant point directly in front. It may or may not be necessary to dilate the pupil. It facilitates much for the physician to be comfortably seated, relaxed, and adjusted for the important work at hand. Any of the various patterns of ophthalmoscopes may be selected. For more intense illumination and more minute examination, one of the self-luminous ophthalmoscopes is preferable.

In order to appreciate retinal vessel pathology, it, of course, is necessary that one familiarize himself with the appearance of the normal fundus. The vessels emerge from the substance of the optic nerve, pass over its head and out onto the retina, branching in all directions. Being terminal vessels, they do not anastomose. The vessels project very slightly above the plane of the retina and are more or less fixed by surrounding connective tissue. The largest of the retinal vessels are about one sixth of a millimeter in diameter and the smallest one hundredth of a millimeter, just large enough to permit the passage of a leukocyte. These vessels, studied with an ophthalmoscope, through the various media of the eye, are observed magnified, possibly, some twenty-five times. This fact should be especially impressive to the clinician of the great value to be gained by careful study of the fundus oculi in all conditions where the blood vessels, heart, and kidneys are in question. The vessel walls are weaklly developed and are supported in the retina by a very delicate connective tissue—Mueller's fibers and the neuroglia. Vessel translucency, especially with the arteries, depends upon the healthfulness of the delicate vessel wall and also the surrounding tissue. The translucency is a matter of great importance in determining whether or not pathology is present. If this translucency is gone, it is an advance sign of beginning arteriosclorosis. As a rule, arteries cross the veins, but sometimes the opposite is true, or perchance the artery may cross the vein and, at a recrossing farther along, the vein cross the artery. At these crossings, the artery translucency may be examined and by careful observation one can see dimly the outline of the underlying vein. These observations should be conducted away from the head of the nerve, as the blood column in this region is so thick.

It is always difficult to determine in a given subject whether or not the vessels are wider or narrower than normal, vessel width varies so greatly in different subjects. If, however, the caliber shows a variation in different parts of its course, pathology is present. This is usually observed in conjunction with other serious vessel changes.

Normal vessel crossings show no depressing or crushing of the caliber of the vein or deflection in its course. Care should be exercised not to mistake congenital variations for pathological changes. The retinal circulation is observed in highly organized nervous tissue and it is very probable that there is a close relationship with the cerebral vessels. Examined carefully by an experienced observer, the earliest pathological changes indicative of impending danger to the general vascular circulation may be detected in the small twig-like vessels, particularly in the macular region.

Both the artery and the vein, accompanied by lymphatics and surrounded by fibrous tissue, emerge from the substance of the optic nerve. The elastic sheath of the optic nerve allows for the enlargement and collapse of the vessels. The lamina cribrosa surrounds the vessels more closely and is less resilient. This feature is well illustrated by the frequent observation of the enlarge-

ment of the vein as it passes through the meshes of the lamina. The lymphatics blended with the adventitia form the perivascularis. Frequently one sees white lines paralleling either side of the vessels as they lie on the head of the optic nerve. These lines sometimes extend into the retina beyond the border of the nerve head. Care must be exercised not to consider them always pathological, as they are frequently physiological, as observed in perfectly healthy young subjects. The explanation of their presence is rather uncertain; according to Zalzmann, they may be an optical result of the adventitia with thickened neuroglia. It is certain they are not the same as the white lines observed on the retina. Retinal vessels have white light streaks along the center of the vessel, rather more prominent in the arteries than in the veins. Gunn believed that it is due to refraction of light; Bailliart, the reflection of light on the walls of the vessels.

This very brief description of the normal retinal circulation will aid in detecting certain changes indicative of early pathology. The ophthalmoscopical examination of the biochemistry of the tissues in the living body is so incomparably more delicate than laboratory tests. The term sclerotic vessels is perhaps better nomenclature than arteriosclerotic. Many investigators use the terms primary and secondary arteriosclerosis. The histology of the retinal vessels is simple—endothelium, muscular and connective tissue. Toxins of the body may attack the endothelium, causing a thickening of the intima, atheroma, or a sclerosis in the muscular coat; either may be primary but if the former is first attack, and it grows outward attacking the muscular coat, the sclerosis of this tunica is secondary. Atheroma is of infrequent occurrence in the retinal vessels and usually results in thrombosis. It is a condition which usually attacks the larger vessels, such as the aorta, carotids or cerebral vessels.

Syphilis and tuberculosis, which are outstanding in their pathologic influence on the vascular system, are not so with the retinal vessels. That is, the retinal circulation of the posterior segment of the eyeball is relatively free from such invasion. The uveal tract of the anterior segment, and extending back as the chorid, is especially vulnerable Basing a diagnosis and prognosis on information obtained by purely mechanical means such as palpation of radials or blood pressure, only erroneous deductions can be made. Examination of the radials may be misleading in that they may be unduly rigid or flaccid, or there may be a marked difference between the two sides. With the blood pressure apparatus, if the ordinates of the systolic and the diastolic pressure remain high, but keep parallel and do not tend to meet, then the prognosis is more favorable. If, however, there is not a harmonious relationship, with the diastolic pressure persistently high, serious danger is imminent. A correct appraisal can be appreciated only in conjunction with the accurate clinical picture observed in the fundus oculi by the ophthalmoscope. It is the picture screen upon which life's vascular picture is shown.

In view of the fact that vascular disease in one part of the human organism reflects largely the vascular condition in other parts and that the fundus oculi is the only accessible point for such clinical study, what are the cardinal changes to be observed?

(1) Impairment of the translucency of the retinal vessels is a delicate change. This is the first observable pathological change and is not necessarily due to sclerosis, but can be caused by any toxemia, such as accompanies acute infectious disease. It is observed by study of the vessels at crossings and may or may not be accompanied by increase of blood pressure. From a clinical point of view increased blood pressure affects the translucency of the retinal blood vessels as a site of predilection.

(2) Later, accompanying the loss of translucency, is the "copper-iwre" appearance and with it the "dotting" of the light reflex. Copper-wire vessels have much the appearance of a polished trolley wire from which sunlight is reflected.

(3) An unduly red retinal reflex, together with a pinkish to brick red color of the optic disc, is an early evidence of vascular disturbance, especially in the presence of an increase of the blood psessure.

(4) The appearance of white lines on either side of the vessels at the crossings follows shortly after the loss of translucency. This development plays an important role in the binding together of the perivascularis of the artery and vein.

(5) Later will be observed white lines accompanying the retinal vessels on either side. This is a perivasculitis, an edema and inflammation of the perivascularis. These changes are present in syphilis, nephritis, and retinitis of pregnancy.

(6) Pathological tortuosity is a very uncertain factor and must not be confused with a certain normal waviness of the vessels. A very significant feature is the presence of the "corkscrew" vessels of de Schweinitz. Venous tortuosity may be explained as due

to obstruction to the outflow. Arterial tortuosity is more difficult to explain; one theory is the deterrent effect of blood passing through a narrowed tube.

(7) Variations in the lumen are of serious import. A localized sclerosis of the perivascularis and a hypertrophy of the endothelial cells seem to be the most acceptable theory proposed in explanation of the condition.

(8) In silver-wire arteries the central light reflex is very bright and the entire surface of the vessel has a much lighter appearance. Fine red streaks parallel either side of the light streak. A vessel thus involved usually suffers its entire length.

(9) Venous pulsation if of rather frequent occurrence. It may be observed in perfectly normal fundi, particularly on the disc, and is explained by the obstructing influence of the lamina cribrosa as the vein passes through its meshes. Arterial pulsation is quite another matter, in that it is observed only in pathological conditions such as valvular disease of the heart. It is frequently described as being observed only on the disc. This is not strictly correct for the reason that careful observers have detected it away from the disc. It is observed as a tremble and can sometimes be detected by carefully watching the light reflex surrounding the artery. Just recently the writer observed, in a woman aged 27 years, the inferior artery pulsate. The pulsation was partly on the disc and extended fully a disc diameter beyond. The artery seemed to have a slightly rotating, trembling appearance. Attention was attracted to it by noting that the white lines seemed slightly to narrow and broaden.

(10) Compression at artero-venous crossings is easily observed but not so readily explained. Gunn was the first to describe the condition as vessel indentation. The more or less accepted explanation has been that the weight of the rigid artery resting on the resilient vein indented it. This, however, does not explain compression of a vein where the artery passes below instead of over the vein. Pine's theory is much more tenable. His explanation is that in sclerosis the perivascularis at the crossing becomes inflamed, forming a connective tissue; the resulting scarring contracts, thus compressing the vein, the weaker vessel of the two. Jaskson suggests that it may be due in part to a changed refraction—the passing of the vein into the non-resisting choroid. The constant hammering of the artery may develop a thickening in the venous wall, like a callus. Simple compression does not impede the venous flow, but later, when actual crushing occurs, the flow is impeded, which results in banking of the vein peripheral to the crossing.

(11) At crossings where crushing has occurred, the vein is frequently deflected, most frequently centrifugally but upon occasion centripetally. When centrifugally deflected, it is influenced by the direction of the arterial blood current, but when centripetally deflected, it results from a greater advance of the sclerosis of the perivascularis of the artery, the connective tissue formed dragging the vein toward the center of the fundus.

As sclerosis advances, changes increase in the retinal vascular tree. Beyond the point of crushing, veins show tortuosity, banking aneurysmal formation, and hemorrhages. In the artery these changes are due primarily to the blocking at crossings, but essential increased blood pressure, with its secondary effect of sclerotic changes, thus weakens the arterial wall, which results in either dilation or hemorrhage. With the veins, crushing at the crossing impedes the flow of blood and the back pressure causes the weakened diseased venous wall to dilate. Increased blood pressure, particularly a sustained diastolic pressure, plays a very important role in the development of retinal sclerosis. It is more than likely it has a special predilection for the retinal vessels, showing equally with the cerebral vessels, the kidney being a close second.

It is a very significant fact that, of all higher sense-organs, the retina is the first to be involved in the vascular disease. Vascular hypertension always precedes retinal disease. In retinitis albuminurica the eye changes have, upon occasion, been observed some time in advance of kidney involvement. The albumin usually is small in amount. In the toxemia of pregnancy, the retinitis is preceded by a hypertension. Neither of these two conditions, retinitis albuminurica or retinitis of pregnancy, is a sequel to kidney disease, but they are due to a common toxin affecting the vascular system with a special predilection for the retinal vessels. In the latter, the intoxication is due to pregnancy; terminate it, and recovery is certain. A subject for thoughtful consideration is the association of vascular changes with liver-endocrine and the parathyroid in relation to calcium biochemistry.

LOBAR PNEUMONIA COMPLICATED BY ACUTE EMPYEMA

(Case Report)

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This rather typical case of lobar pneumonia, complicated by acute empyema, is presented to emphasize two points:

1. The value of oxygen inhalation in pneumonia.

2. The advisability of conservative treatment in empyema.

A Mexican laborer for the Texas & Pacific Railroad, contracted an upper respiratory tract infection about March 20, 1931. He remained off work for one or two days, without medical attention, coughing, suffering from general malaise, headache, and aching extremities.

Returning to work, he was forced to stop again and he finally called for a doctor. On March 27th, he was visited for the first time. He complained of sore throat, non-productive cough, malaise, aching arms and legs, and headache. His past history did not throw any light on the present illness, and the family history was irrelevant. Married for 13 years, he was supporting a wife and three children in the unhygienic surroundings to which men of his race and occupation are accustomed.

Examination revealed a well-developed and well-nourished Mexican man, age 31, apparently acutely ill. His temperature was 102, pulse 110 regular. Pharynx showed some inflammation. Examination of the lungs revealed no rales, and only normal broncho-vesicular breathing. Cough sedative and antipyretics were prescribed.

The following day, the patient appeared more acutely ill. Temperature was only 101.8, pulse 104, respiration 28, but perspiration was profuse, cough was almost incessant, and at base of left lung were found increased fremitus and voice sounds, dullness, bronchial breathing and crepitant rales.

Vega was admitted to Hotel Dieu with a diagnosis of lobar pneumonia, of left lower lobe. His temperature rose to 103, where it remained for two days. Consolidation of the left lower lobe was complete on the second day of hospitalization, the left upper lobe and entire right lung remaining clear. Pulse rose to 120, and digitalization was thought advisable. Supportive measures accompanied this medication, with inhalations and antipyretics.

On March 30 patient complained of pain in his left axilla, where a loud friction rub was heard. Adhesive strapping relieved the pain. The cough decreased in intensity, but a rusty sputum now appeared, typically blood-tinged and frothy. The temperature broke into a septic curve, rising to about 102 daily.

April 2 temperature was only 100 but cyanosis became more marked, respiration and pulse speeded up, and examination discovered extension of the pneumonic process into the left upper lobe. This lobe promptly became consolidated. The patient's pulse was weak and thready, cyanosis was increasing, respiration was seriously impaired, as evidenced by a respiratory grunt and inspiratory dilatation of alae nasi. An oxygen tent was installed and relief was immediate. Cyanosis yielded to a pink color, the grunt disappeared, and patient went to sleep. For three days, he was kept continuously under the oxygen tent. During this time, the entire left lung appeared consolidated. Sputum changed from blood-tinged to purulent type. The oxygen tent, which must be credited with some responsibility for this man's recovery, was then withdrawn. Subcrepitant rales remained in the left lower lobe, consolidation of the left upper lobe was still apparent, but patient's general condition was much improved. Pain persisted in left axilla, temperature rose to about 100 daily, but the patient felt so well he was restrained in bed with difficulty.

Prolonged fever, flatness over left upper lobe, with decreased voice sounds and breath sounds in this area, justified an x-ray of thorax, which was made on April 20th. The report was as follows:

"Chest, supine and sitting positions: Right Lung: Increased general peribronchial thickening with some areas of parenchymatous infilteration in second and third interspaces. Left Lung: There is extensive fibrosis with areas of infiltration extending from diaphragm to just below 7th rib posteriorly. There is a dense shadow extending from 7th rib posteriorly to lower border of third rib posteriorly, that is suggestive of encysted fluid. There is no displacement of the mediastinal viscera.

"Conclusions. The markings in the 2d and 3d interspaces, right lung, are suggestive of small amount of pneumonic infiltration. The lower lobe of the left lung is suggestive of pneumonic changes. The density of the upper portion of the left thorax is suggestive of fluid which is apparently encysted by the intralobular pleura."

On April 21st, thoracentesis was done. A needle was inserted into the 6th interspace posteriorly, and 50 cc. of greenish-yellow pus evacuated. Dr. Waite reported smear and culture showed gram-positive diplococci, with gram-positive cocci in short chains also in the smear.

It was evident that more pus was present in the pleural cavity. The patient's condition remained good, however, with only a low-grade septic fever (never exceeding 100 deg.) Conservative treatment was therefore thought advisable.

On April 27th, using novocaine for local anesthesia, an incision was made lateral to the left pectoralis major muscle and a portion of the fourth rib was resected. The pleura was incised, and about 600 cc. of pus evacuated. Smear showed a few gram positive diplococci; culture was negative. About three ounces of fibrin were removed from the cavity. Two retention catheters were inserted, and the wound closed about them. No mediastinal flutter was observed, patient suffered from no shock, and his temperature immediately dropped to normal. It has not since exceeded 99, and has remained normal for a week.

Dakin's solution was first injected every three hours; the procedure has now been reduced to three times a day and once each night. Pus has ceased to drain, the fluid returning clear. Capacity of the cavity has decreased from 600 cc. to approximately 60 cc.; the patient feels well, his only complaint being because of confinement in bed. On May 6th, forced expansion of the lung was begun, by having the patient blow against hydrostatic pressure, in the famaliar two-bottle apparatus.

X-ray on May 12th reported:

Chest, supine and right lateral positions:

There is a shadow of two drainage tubes in the left pleural cavity apparently between 4th and 5th and 5th and 6th ribs. The lung is partially collapsed at this area. The pleura is greatly thickened, but no definite fluid pocket is seen.

Today (May 13th) one tube was removed. The other will be kept in place until the size of the cavity is reduced to about 30 cc., continuing lung exercises and lavage with Dakin's solution.

DISCUSSION

DR. BLACK: Grants that while the oxygen tent might have been responsible for the patient's recovery, the mortality are is no lower where oxygen is used and where it is not instituted in cases of this kind.

DR. MOTT RAWLINGS: Agrees with Dr. Black that oxygen is very effective in relieving symptoms.

DR. GREEN: Points the advantage of the closed

method in treatment of empyema, which was popular during the World War. Dr. Danna of New Orleans advocates treatment by aspiration, replacing the amount of fluid withdrawn by an equal amount of air. Allow time to elapse for complete encapsulation of fluid. The lung will draw away from the chest wall and pus will not gravitate downward. Wait for adhesions to form before resecting. There has been no improvement on Dakin's solution for treatment in these cases.

DR. CUMMINS: Thinks that aspiration and injection of gentian violet more effective than Dakin's solution.

DR. BARRETT: Spoke of a case in a child about eight years old who had pneumonia. Patient was aspirated five times, nothing injected. After the last aspiration child recovered.

PUBLIC HEALTH NOTES

J. ROSSLYN EARP, DR. P. H.
Director New Mexico State Bureau of Public Health

COMMUNICABLE DISEASE REGULATIONS

A new set of regulations for the control of the communicable diseases was promulgated by the New Mexico State Board of Public Welfare at a meeting held on July 7. These new regulations replace those promulgated on November 22, 1922, together with amendments promulgated on February 8, 1926. Copies may be obtained from county health officers or directly from the Bureau of Public Health in Santa Fe.

Two new diseases, epidemic encephalitis and tularemia, have found their way into the new set of diseases to be controlled, although admittedly the means of control are not yet perfected.

The most important changes in the regulations consist in the abolition of placarding in epidemics of measles and whooping cough. It is recognized that, once an epidemic of either of these diseases is established, placarding is impotent to arrest its course; the health officer's time can be more usefully employed in urging the isolation of well babies and protecting those, especially in the younger age groups, who have been exposed to infection. Placarding is still required in isolated cases of these two diseases. A paragraph in the old regulations permitting health officers to use "registered mail" to send "such instructions as shall be necessary for the protection of the public health" has been deleted. Improved roads and the development of public health nursing have made this compromise unnecessary.

Other changes are the natural consequence of the newer knowledge of immunology and epidemiology.

METHANOL ANTIFREEZE

The following agreement has been reached between the U. S. Public Health Service and the representatives of the interests manufacturing methanol:

"Sec. 1. The word 'person' shall be construed to include natural persons, co-partnerships, associations, and corporations. The word 'methanol' shall be construed to mean and include the products commonly known as 'methanol', 'metnyl alcohol', 'wood naphtha', or any trade material which is essentially CH_3OH.

"Sec. 2. On and after July 1, 1931, no person shall sell, offer for sale, give away, or transfer to another person any substance containing more than 15 per cent of free methanol for use as antifreeze or for ultimate use to prevent freezing in automobile radiators, unless the four following provisions are complied with:

"A. It shall contain sufficient methyl violet to give an intense and permanent color to the solution, equivalent to that given by the addition of 0.01 pound of Methyl Violet 2B to 100 gallons.

"B. It shall contain antimony-potassium tartrate 0.4 pound dissolved in each 100 gallons, chloracetophenone 0.4 pound dissolved in each 100 gallons, and triethanolamine 0.1 gallon mixed with each 100 gallons.

"C. It shall contain at least 20 per cent water, by volume.

"D. All containers shall have prominently displayed a warning sign reading as follows, in prominent heavy Gothic capital letters, red on a white background:

X
CONTAINS OVER 15% METHANOL
(METHYL ALCOHOL, WOOD ALCOHOL)
CAN NOT BE MADE NONPOISONOUS
AVOID SPILLING

the words to be surmounted by skull and crossbones (X). The skull and crossbones and the letters of the word 'poison' shall be at least 1/30 as high as the longest dimension on the container, but not necessarily more than 1 inch high, and the letters of the remainder of the warning sign at least 1/60 as high as the longest dimension of the container, but not necessarily more than ½ inch high. This warning sign shall be separated from other letters or signs by a distance at least 1/15 as great as the longest dimension of the container, but not necessarily more than 2 inches. An automobile radiator shall not be construed to mean a container under the provisions of these regulations, but all containers, whether belonging to the buyer, seller, or others, shall be provided with the sign as heretofore described.

"Sec. 3. On and after July 1, 1931, no person shall sell, offer for sale, give away, or transfer to another person any substance containing more than 15 per cent of free methanol for any purpose unless the containers have prominently displayed a warning sign reading as follows, in prominent heavy Gothic capital letters, red on a white background:

X
CONTAINS OVER 15% METHANOL
(METHYL ALCOHOL, WOOD ALCOHOL)
CAN NOT BE MADE NONPOISONOUS
AVOID SPILLING

the words to be surmounted by skull and crossbones (X). The skull and crossbones and the letters of the word 'poison' shall be at least 1/30 as high as the longest dimension of the container, but not necessarily more than 1 inch high, and the letters of the remainder of the warning sign at least 1/60 as high as the longest dimension on the container, but not necessarily more than ½ inch high. This warning sign shall be separated from other letters or signs by a distance at least 1/15 as great as the longest dimension on the container, but not necessarily more than 2 inches.

"Sec. 4. All sales, except at retail, shall be made with the understanding that the purchaser will carry out the preceding provisions.

"It is also agreed that there will be no new extension of the use of methyl alcohol in industry until the conditions under which the substance can be used safely are scientifically established."

This agreement provides for a uniform distinguishing color of the antifreeze liquid, a chemical deterrent against its use for potation and a warning label. The Public Health Service has received assurances from so many manufacturers that they believe that all important sources of methyl alcohol in this country will be controlled by the above agreement. Should this expectation fail to be realized the State Board of Public Welfare will no doubt promulgate regulations to the same effect.

SANITARY DRINKING FACILITIES

The Women's Bureau of the U. S. Department of Labor has just published a short but important study of sanitary drinking facilities[1]. It is shown that an improperly constructed fountain, e. g., one with a vertical jet or with a jet improperly guarded, may be quite as dangerous as the common drinking cup. Standards for construction are quoted from national organizations and from state sanitary authorities. In spite of its well-recognized defects, the vertical jet fountain is, it seems, still being regularly installed. Physicians will do a public service by calling attention to this little pamphlet whenever plans for installing drinking fountains in schools, factories or public places may come to their notice.

(1) Sanitary drinking facilities with special reference to drinking fountains, Bulletin of Women's Bureau No. 87, U. S. Government Printing Office, 1931. Price 10 cents.

POSTURE AND HEALTH

Five years ago the Children's Bureau published a pamphlet on what they were pleased to call "Posture Clinics". The author thereof explained with ex-cathedra authority that "the posture of the average man becomes dropped or ptotic" and that "with the consequent derangement of the elaborate mechanism maintaining the erect posture of the body, comes derangement in position of the viscera, which manifests itself frequently in obscure but distressing ailments of later life". One rather wonders how he would have replied if he had been asked to put name to the distressing ailments and to say exactly how he knew that they were derived from postural defects. However that may be, the matter of improper posture had been given a place in serious literature—unless I am mistaken, the four posture "types" originated in Harvard itself—and there were those who were not slow to boom the discovery. Physical education is a profession which for all practical purposes is of very recent date and its experts were only too anxious to discover a respectable **raison d'etre.**

About the time that the Children's Bureau pamphlet was in preparation, the present writer was energetically recording the silhouettes of college boys and girls and referring all those who were not up to the Harvard class A standard to the physical education deartment for "correction". His enthusiasm for this work was not a little dampened by two observations: first, that those with poor posture frequently enjoyed excellent health; and, second, that those who worked conscientiously for the physical education director showed little if any more improvement than those who consistently cut their classes. The writer passed on to other spheres of activity but the posture boom has continued. Last year at the White House Conference, the committee on medical care for children discussed the question of posture and devoted rather more space to it in their report than they devoted to mental hygiene. They admit that "much of this so-called posture work being done in the schools and elsewhere is nothing more than simple calisthenics or gymnastics", but they do not question the importance of posture work which is not "so-called". On the contrary, they find that the instruction in this subject in the majority of medical schools is "very inadequate". When the medical schools give adequate instruction in all the subjects for which adequate instruction is demanded we shall none of us begin to practice till we are forty. But the adequate course in posture must undoubtedly include the very careful biometric and statistical studies recently made by the U. S. Public Health Service. The latest of these[2] demonstrates very convincingly that there are no positive types at all but only a great variety of human body forms, a variety which is as wide in earl childhood as in adult life. Moreover, the authors can find no relationship between posture and physical impairment. If Mr. Mencken has had a chance to read this pamphlet, how it must have rejoiced his heart!

For our part we are much more willing to believe that poor posture is a consequence of ill health than that it is a cause. Take for example the case of

THE EXHAUSTED CHILD

Are children more frequently exhausted to-day than they were a generation ago? Dr. Richard C. Clarke of the Bristol Royal Infirmary believes that they are and that the modern manner of bringing them up is at the root of the trouble. It is possible that the experiences of their parents during the War may have resulted in a nervous and excitable generation of children. On this the doctor has an open mind. But he is inclined to blame the modern environment rather than the modern child. In the nursery, he says, it is infant-welfared from morning until night. Its toys are too complicated. Even a walk in the street has become a dangerous adventure. The efficiency of the modern school has been increased and the nerves of the modern scholar testify to the greater strain.

The exhausted child is not hard to detect although parents and teachers too seldom recognize the symptoms. The most prominent evidence is a lack of vitality—of tone—of the muscular system. The child "stands over itself". This is because it is depending on the bones and ligaments rather than upon the muscles for support. The shoulder blades will stand out behind and the abdomen in front. In advanced cases, even the face loses its expression. Naturally, a great many of these children are of the high-strung type, difficult, argumentative and emotional. Such children are peculiarly liable to exhaustion, but not all exhausted children are nervous. They may present symptoms of various kinds and degrees which must be considered by the family doctor who will decide whether they are simply a part of the picture of exhaustion or whether they indicate some particular disease which may be contributing to the child's exhausted state. There are probably many children suffering from this "amyotonic" state in various degrees that are not under an kind of treatment. The latter may be summed up in the one word "rest" but the detailed prescription of rest is a matter for the expert.

(2) Scyhwartz, L.; Britten, D. L.; Thompson, L. R.; Studies in Physical Development and Posture, IV Postural Relations as Noted in Twenty Two Hundred Boys and Men, Washington, 1931. Price 20 cents.

CASE REPORT

E. J. CUMMINS, M. D.
El Paso, Texas

(Reported at October Staff Meeting of Masonic Hospital, El Paso.)

Case No. 12995, child, 7 years of age.

About three years ago, in the latter part of 1928, child complained of pain in his right thigh just above the knee. Shortly after the onset of the trouble, his tonsils were removed because of a diagnosis of rheumatism. After his tonsillectomy, the child still continued to have pain about the right knee. In January, 1931, he was brought to El Paso and an x-ray of the right femur was taken. A diagnosis of osteomyelitis was made. He was entered in the Masonic Hospital and operated upon. The surgeon states that there was no bone destruction, but there was an elevation of the periosteum and a considerable amount of dark-colored material, which was thought to be necrotic bone. This was removed. This material was found both in the cortex and the medulla. There was no free pus. Cultures from this material were negative. The maximum temperature during this hospital stay was 101°.

Child was again admitted to the hospital on July 18, 1931. He had not done well since his operation. He had continued to have some pain and ran some fever. X-ray pictures of the right femur at this time showed destruction of bone, tumor mass in the soft tissues and spiculations of bone both parallel and perpendicular to it. Periosteum was raised, the bone was wider than normal. A diagnosis of osteomyelitis was again made, and the child was again operated upon. The operating surgeon reported free pus beneath the periosteum and surrounding tissues. There was also considerable bone destruction. His maximum temperature during his stay in the hospital was 102.2°. He was dismissed from the hospital with a temperature of 99.6°. Cultures from the pus were sterile.

On August 8, 1931, patient returned to the hospital for insertion of surgical maggots. His temperature varied from 101° to 103° during his hospital stay. A pulmonary complication occurred at this time and x-rays of his chest were taken. X-ray report stated that the right lower lobe was generally clouded by confluent areas of consolidation. The right diaphragm was fixed at the rib margin. There were also areas of consolidation near the hilus of the left lung. A week later a second x-ray was taken and the report stated that there were areas of unresolved bronchopneumonia. These lesions were unchanged since the previous picture. Also that there was a dry pleurisy of the left chest. No evidence of fluid was noted. Child stayed in the hospital one month.

After leaving the hospital his temperature fluctuated from normal to 103°. Upon examination one got the impression that the fever was not caused from the condition of his limb. There was distinct enlargement of the lower end of the right femur. This tumor mass was not distinctly tender, but it was hot and painful on deep pressure. The child was breathing rapidly and one's attention was directed to the chest.

Examination of the chest revealed dulness over the right lower lobe, decreased breath sounds, and many rales. A similar condition was noted in the left chest.

X-ray of the right femur on September 21 showed a tumor mass outside of the bone, marked bone destruction. The pathology involved the lower third of the right femur, but did not extend into the epiphysis. The bone was wider than normal and there were bony spiculations both parallel and perpendicular to the shaft. There was an area of diminished density at the site of the former operation. X-ray of the chest showed a fluid line low down on the left side and many small areas of consolidation scattered throughout both lungs. At this time both pleural cavities were aspirated. A small amount of thin serum was obtained from the left pleural cavity and about 3 cc. of thick pus from the right pleural cavity. Cultures were sterile. Diagnosis of Ewing's sarcoma with lung metastasis was made.

The differential diagnosis between sarcoma and chronic osteomyelitis is often difficult to make. It is likely that this child has had sarcoma of the lower end of the femur for the last three years and during that time he has been treated for rheumatism and osteomyelitis. It is not unusual for this mistake to be made. Cases of osteomyelitis have been treated for sarcoma and cases of sarcoma have been treated for osteomyelitis. The temperature that this child had and the leukocytosis of 18,000, would be somewhat confusing unless one realizes that cases of sarcoma, especially when metastasis has occurred, run a fever from 101° to 10° and a leukocytosis of 15,000 to 20,000.

CASE REPORT

G. WERLEY, M. D.
El Paso, Texas

(Presented before the El Paso County Medical Society, Oct. 12, 1931.)

Mr. C. S., age 41, dental-plate maker, while in his office on Sept. 29, 1931, had numbness and a dead feeling in his right leg, with loss of sensation and control. At the end of fifteen minutes there was complete paralysis, with some pain in the calf of the leg and the anterior muscles of the thighs. He was pale, covered with cold sweat, pupils dilated and pulse weak. Examination showed the right leg to be pale and cold, the veins collapsed, and no pulse lower than Scarpa's triangle. There was complete paralysis of the whole limb.

Because of mitral stenosis and auricular fibrillation and the history of an attack of left hemiplegia a year ago, a diagnosis of embolism seemed most likely, and the patient was taken to Providence Hospital for embolectomy. While waiting for Dr. Haffner, repeated examinations of the leg arteries were made. Finally the pulse in Scarpa's triangle was a little stronger and with it a marked palpable thrill occurred and a loud bruit was heard with each pulsation. The patient said that the sensation in the leg was like that when the blood-pressure cuff is being released on the arm. These phenomena continued for about ten minutes and then entirely disappeared. However, by pressure on the internal iliac, the same sounds could be reproduced. He was soon able to move his leg and next day could walk quite well. The temperature rose to 99.5°.

Of course the idea of embolism had to be discarded—an organized clot could not disappear in so short a time in any way imaginable. That the artery was obstructed high up is evident from what was observed. There may also have been some reflex peripharal spasm.

On further inquiry I found that, as a child and up to his eighteenth year, he had suffered from violent sick headaches always relieved by vomiting. Bread and milk were sure to start it. Nuts of various kinds also brought on attacks. Of late he has drunk malted milk and eaten pecan cookies.

It is to be noted that his temperature went to 99.5° the evening of his attack.

The case has been a puzzle to me but I have a solution that may be right or wrong. I will reserve it until after the general discussion.

NOTE: Patient has since died and post mortem showed, in addition to mitral stenosis, a thombus filling the basilar artery of the brain. The aorta was moderately sclerotic and there was a sclerotic

patch about 2 cm. long in the right common iliac artery. Otherwise, the artery was normal. So the explaination offered for the obstrucciton seems to be as good as any.

CASE REPORT

A. W. MULTHAUF, M. D.
El Paso, Texas

This case is one of injury to the kidney from a fall. Injuries of the kidney are best divided into two groups:

1. Subparietal or non-penetrating, in which there is no external evidence of injury except, possibly, a slight bruise on the skin.

2. Penetrating injuries, where there is an external wound of entrance over the kidney region or in close proximity to it.

In the mechanism of the injury in the subparietal type, the force may be exerted either from the front, side, or from behind. The kidney may also be injured in a manner which is analogous to that known in cerebral injuries, that is, by contrecoup. This mode of injury is, however, very rare. Injury by muscular action is also rare and can occur as a result of sudden contraction of the diaphragm or of the abdominal muscles; for example, after lifting a heavy weight or in abrupt flexion of the body.

Kuster was the first to offer the hydraulic theory in order to explain injuries of the kidney, although this explanation cannot be applied to the tearing of the vessels of the renal pedicle or of the ureter. It serves, however, to clear up the manner in which at least the injuries of the kidney proper occur. The kidney, when filled with blood and subjected to compression, will tear as does the skull or brain in the point where its elasticity fails to resist the compressing force.

The type of injury presented in this case report can be classed as a contusion of the parenchyma. In this form of injury there is hemorrhage into the cortex and medulla without any visible tears of the fibrous capsule or parenchyma.

We shall now take up the clinical picture of kidney injury. There are those cases in which the symptoms of primary shock are followed by those of internal hemorrhage. In these cases the patient is apt to continue to work or walk around until the anemia from hemorrhage around the kidney compels him to seek medical aid. It must not be forgotten that the pallor, small rapid pulse, and so forth, in the first hours, may be due to shock as much as to hemorrhage. So much for the clinical picture.

Hematuria is present in about 90 per cent of the cases. It usually is observed immediately after the injury but may be delayed if the ureter is blocked by a clot.

Pain is rarely absent. In most cases it is very severe and of a colicky nature.

Peritoneal irritation may predominate in the clinical picture. There may be nausea and vomiting.

Diagnosis of subparietal kidney injury. The outstanding features of these in the order of their frequency are hematuria, shock, signs of internal hemorrhage, localized pain, rigidity and gradually increasing swelling over the injured kidney, and signs of peritoneal irritation. The diagnosis is definite when carried out with cystoscopy and pyelography.

The chief dangers of kidney injury are death from hemorrhage during the early, and from infection in a later, period. The treatment may be divided as follows: (1) expectant, that is, conservative; (2) operative.

Expectant treatment. This, in the opinion of those who have had a large experience, is the treatment of choice. Operation is indicated under these conditions: (a) If the hematuria is so severe and persistent as to threaten life. (b) If the signs of internal hemorrhage are increasing rapidly. (c) If chills. fever, and other evidence of infection of a perinephritic accumulation of blood and urine are present.

In regard to the operative treatment, it might be said that it presents a very difficult surgical procedure on account of the inaccessibility of the renal pedicle and on account of the bleeding which immediately commences upon dislodging the clots from the torn surfaces.

The treatment we employed in this case was of a very conservative nature, complete and absolute rest in bed, observation of pulse and blood pressure constantly. The convalescence was stormy for the first three days, during which time the patient was showing signs of a peritoneal irritation, due, we presume, to the reflex injury to the kidney, but at the end of ten days he was in a position to leave the hospital and now is back on his job and apparently well as ever.

CASE OF EPISTAXIS LASTING A WEEK
(Diagnostic Discussions)

(Case selected from the Case Records of the Massachusetts General Hospital, as published in New England Jour. of Med., for July 17, 1930, page 129.)

CASE HISTORY

A Filipino cook aged twenty-nine, single, entered the hospital complaining of backache of one month's duration.

The family history is unimportant.

Past history. He lived in the Philippine Islands until four years before admission. For the past four years he had lived in Massachusetts. It was impossible to obtain a history of any previous illness.

Present illness. One month before entry he was thoroughly chilled on a long automobile ride. That night he felt feverish and was kept awake by a deep, dull, burning ache in the thoracic portion of his back. The pain was persistent, being most marked in the left portion of the back. At times it radiated upward to the neck and head. He continued to work, however, until one week before admission, when he became nauseated and vomited several times. It was then that he first noticed blood streaked sputum. He developed also a slight but unabated epistaxis which had continued more or less constantly, being most marked during mornings. At times he had raised small clots of blood which seemed to come from the posterior nasopharynx. He went to bed for three days, then attempted to resume his work, but because of pain, epistaxes, morning headache, loss of appetite, lassitude, and increasing dyspnea on exertion he decided to enter the hospital.

Physical examination showed a well developed and well nourished Filipino lying quietly in bed supported by a back rest. He presented a somewhat worried and anxious appearance, but seemed in no distress. His lips were pale; the skin of fine texture, hot and dry; the nose filled with dark red crusts; the breath heavy; the tongue and gums red but not bleeding; the pharynx injected. The eye grounds were pale, but there was no edema of the discs. In the right eye there was what appeared to be a linear hemorrhage which overlay the edge of the disc for a very short distance. The heart was very moderately enlarged. There was a forceful impulse in the fifth interspace 9 centimeters to the left of the midsternal line. Aortic second sound greater than pulmonic second. No thrills or murmurs. Blood pressure, systolic 158, diastolic 90. The lungs were clear and the abdomen negative. There was no lymphadenopathy. The reflexes were normal.

Clinical and laboratory notes. The temperature varied from 97° to 99° F. and was usually slightly subnormal. The pulse ranged between 70 and 90, usually about 80. The respirations were 20. The admission specimen of urine was clear, amber colored, acid, specific gravity 1.008, albumin the slightest possible trace, no sugar. The sediment showed 3 to 5 white cells, 20 to 30 red cells and a rare hyaline cast per high power field. Subsequent urinalyses showed the specific gravity to vary between 1.014 to 1.018, with a trace of albumin, usually a few white cells, a few red cells, but no casts. The hemoglobin was 35 per cent, red blood cells 2,500,000, leukocytes 9200, differential count 70 per cent polymorphonuclears, 27 per cent lymphocytes and 3 per cent eosinophiles. The platelets appeared normal. The serum showed negative Wassermann, Hinton and modified Hinton reactions. Two stool examinations were negative. Several specimens of vomitus were brown, with positive benzidine test, no free acid, and a total acid of 95. No sputum was obtained.

Course. The epistaxes continued. At times he vomited clotted blood. Usually he was restless. Gradually he became drowsy, apathetic and disoriented. Seventeen days after admission his respirations suddenly ceased without any warning.

Discussion by D. R. Gaskins, M. D., Phoenix

The first thing that is brought to one's attention as he glances over the salient points of interest in this case is the fact that the patient is a relatively young man with a past history that is essentially negative. He comes to the hospital complaining of pain in his back radiating up into the neck and head but finally localizing definitely in the left side. The next series of symptoms are those of hemorrhage, first from the lung and then from the nose. The patient also gives a history of vomiting up small amounts of clotted blood; this, however, could all be explained from his persistent epistaxis, which we are of the opinion is not a primary nasal condition, but due to some general systemic disorder.

Epistaxis is divided under two general heads: first, with bleeding due to some primary nasal condition; second, to some systemic disease. Of these general systemic conditions, the most common are diseases of the blood vessels and organic diseases of the heart, liver, lung and kidneys. Of this group we immediately look to some circulatory change which definitely presents itself to explain the condition of which this young man died.

This man has a definitely enlarged heart with a blood pressure of 158 over 90 and aortic second sound greater than pulmonic second sound. Except in the advanced stages of the disease, when secondary changes may have occurred in the kidneys as a result of myocardial insufficiency or of sclerosis of the renal arteries, the urine is usually normal or contains but a trace of albumin and a few hyaline casts. Functional tests indicate no reduction in the efficiency of the kidneys. Ophthalmoscopic examination may reveal nothing abnormal, although in cases of long standing it frequently shows sclerosis of the retinal arteries, retinal hemorrhages, and even arteriosclerotic retinitis.

The blood picture in this condition is a result of the gradual increasing cachexia which results from these conditions and a secondary anemia from his persistent epistaxis.

I am making a diagnosis of essential arterial hypertension, associated with a low grade nephritis.

Discussion by Orville H. Brown, M. D., Phoenix

The illness in this case dates definitely from a severe chilling about seven weeks prior to death. The history of chest pain, headache, loss of appetite, lassitude and dyspnea, seem to warrant the assumption that a respiratory tract infection resulted from the chilling. The infection must have been of a low grade. The man continued for three weeks to work, the chest pain was severe. There is no testimony as to what influence the respiratory movements had upon the pain. Presumably the pain was more muscular than pleural.

The epistaxis, the hemorrhage within the eye and the red cells in the urine point to a hemorrhagic tendency. As this had come since the chilling it probably resulted from the infection.

The low hemoglobin and the 2,500,000 erythrocytes point to a severe grade of anemia of a secondary type, presumably from hemorrhage.

The brown vomitus may have been from blood which was swallowed or there may have been bleeding from the gastric mucosa.

The absent free hydrochloric acid and the 95 total acidity is difficult to understand, but probably points to a delayed emptying of the stomach.

Blood pressure of 158/90 is a mild grade of hypertension. There was moderate cardiac dilation. The retention of urea in the blood, together with negative phthalein excretion indicates nephritis. The nephritis was probably acute dating from the chilling. His becoming drowsy, apathetic and disoriented indicates uremia.

The sudden cessation of respiration without warning is probably best explained by a medulla hemorrhage.

Diagnosis:

Acute glomerular nephritis.
Secondary anemia.
Uremia.
Medulla hemorrhage.

Discussion by J. Madison Greer, M. D., Phoenix

This is quite an interesting case and one that considerable time should be spent on in discussion. The important points in the case are,—backache in dorsal region of back, probably aching rather than cutting; blood streaked sputum, nose bleed, dyspnea; blood low in reds and low in hemoglobin; heart or rather chest presenting strong impulse at fifth interspace 9 cm. to left.

We must think of the race of the individual and also the fact that he is probably older than his years. The pulse rate and temperature curve, as well as the leukocyte count, would rule out any acute inflammatory condition. Also we find in the physical examination that the lungs were clear.

Because of the pain in the back we must think of something in connection with the spine. In the dorsal region the first thing we think of is tuberculosis or Pott's disease. The other things that would give pain in the back are osteomyelitis of the vertebrae, typhoid spine (whatever that is), aneurism, mediastinal tumor. There are also some forms of neuritis. Because of the findings of bloody sputum, nosebleed and blood in the stomach content we can almost rule out a simple Pott's disease. If we had an osteomyelitis the clinical course should be that of an inflammation. Aneurism or mediastinal tumor would by pressure cause the pain and aching in the back. Because of pressure or erosion it would cause the hemorrhagic condition that we find here as well as the dyspnea. The impulse beat indicates something abnormal in the region of the heart or the aorta, probably the descending. This impulse could be produced by either an aneurism or tumor. The fact that the Wassermann, Hinton and modified Hinton were negative does not, to my mind, rule out aneurism.

I believe that in so far as the blood picture is concerned we can probably rule out any one of the rarer blood conditions. It is stated that the platelets appear normal. The shape and morphology of

(Continued on page 538)

Southwestern Medicine

Printed by THE A. C. TAYLOR PRINTING CO., Phoenix, Arizona
Published monthly for the Board of Managers of the four constituent societies.

Volume XV | November, 1931 | No. 11

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THE EVIL EYE IN THE TWENTIETH CENTURY

Some few years ago, there was much talk over the backwardness of intellectual progress in our boasted American civilization, this comment arising from certain incidents which came to light in the backwoods of Pennsylvania. Some people there resented what they called "spells" exerted by enemies, these evil influences causing sickness and death. When resentment took the form of physical violence, the matters reached the courts and then the news channels. Newspapers and magazines grew fervid in their wonderment that such dense ignorance could survive in the very shadow of great schools of learning, comparing the Voodooism of ignorant negroes and the witchcraft superstition of early colonial days.

So far as we remember, no one called attention to the fact that exactly similar ideas are taught and believed by cults in every large center in this country; that a rich and powerful organization has developed in that very hub of culture which was most scornful of Pennsylvania for harboring such ignoramuses as these believers in the evil eye.

This cult of pseudoscientists teach, among other peculiar beliefs, that one may sit across the continent and by thinking a person is sick can make him sick, and by thinking hard enough can even kill him. It is fairly well known that these (anti) christian (pseudo) scientists hold to the idea that a person can make himself sick by believing he is sick. This is not original with the cult, being a well known physiological and psychological fact, known to medical practitioners for ages. However, it is not generally known that the cult also believe in the evil eye,—under the more pleasing terminology of malignant thought or mesmeric influence, or some such vague and indefinable expressions. The fundamental meaning is no whit different from that which caused the Pennsylvania mountaineer to seek out his enemy and shoot him, nor is it very far removed intellectually from the belief of the southern negro who dreads a spell of evil and carries a rabbit foot to ward it off. A lopsided education has enabled the twentieth century religo-medical successors of their primitive ancestors to hide the crudities of their belief behind a fantasy of words. Their "good thoughts" are protective to the same degree as Sambo's rabbit's foot; the evil thoughts which beset them and which must be resisted, are no different from the evil eye which was thought to have been left behind in the Dark Ages. The vocabularic vestiture is different; the enclosed idea is the same. The evil eye is still with us.

The editor was recently taken to task by one of the adherents of this cult because he expressed the belief that a certain man who has arteriosclerosis and vascular nephritis would not live long. We were told that this expressed belief had reacched the ears of the man and caused him to come down with "mesmeric fear;" that the man's "practitioner" was having considerable difficulty controlling his illness because of this belief held by us and others who knew the man; that if we continued to believe this man is going to die, doubtless he will die and we will have killed him. This is an astounding "religious" belief and shows us that, in spite of intellectual veneer, we are not far removed from the day when the air was filled with evil spirits and good spirits contesting for the mastery of our bodies. Nowadays, instead of offering sacrifice to Moloch, we seek to ward off evil by "good

thoughts." Having mentioned Moloch, it occurs to us that the ultimate outcome of Moloch worship and Mrs. Eddy worship is too often the same,—a sacrificial victim. To a dead child it matters little whether he is burned in the jaws of Moloch or killed by ignorance.

PECOS VALLEY MEDICAL SOCIETY

The twenty-second annual meeting of the Pecos Valley Medical Society is being held in Roswell, N. M., on November 21st. This society is a regular district organization affiliated with the state and national organizations. It serves the physicians of eastern New Mexico, being organized twenty two years ago by the physicians of the counties of Chaves, Eddy, Lincoln, Roosevelt and Curry. Later, the counties of Lea, DeBaca, Quay, Union, Guadalupe and Otero were included. The purpose of the organization is to promote acquaintances and good fellowship, and encourage the study of medical progress.

The Society holds a one day meeting each fall, with a luncheon at which the discussion centers about subjects pertaining to the good of the medical profession of Pecos Valley and eastern New Mexico.

A full report of this year's meeting will shortly appear in this journal.

HOTEL DIEU (El Paso) STAFF MEETING

April 1931

DR. GALLAGHER opened the program of case discussions by presenting a case of traumatic injury to the thorax. B-4563, man, 22 years of age, admitted to the hospital March 4, with two wounds in the chest, bullet in the muscles of right side in posterior axillary line. Right lung was dull and flat up to 3rd space with absence of breath sounds, breath sounds increased above with increase in resonance. Dullness about two spaces higher in midaxilla. X-ray showed an area of density, right lung, extending up from diaphragm to just below 3rd rib anteriorly and 6th rib posteriorly. There is a suggestion of fluid. Large amount of air in the soft tissues just above the clavicle at axillary line. A shadow of a bullet is seen in the soft tissues at axillary line opposite 7th rib. Not able to obtain fluid by aspirating. Sounds gradually cleared up, evidently injury to and bleeding in the lung gave signs of consolidation in the lower lobe. Patient dismissed from hospital March 25, in improved condition.

Generally speaking, in cases of abdominal wounds it is advisable to operate but greater danger is encountered in chest operations on account of the proximity to the heart. Hemothorax may occur but rarely goes above the 3rd rib and if time is allowed for absorption, very rarely is there pleural shock. Allow the patient complete rest. In case of a sucking wound close with sponges or wet dressings and check paradoxical respiration. In case of fractured ribs immobilize patient and make as comfortable as possible. Much hemothorax and empyema were seen during the war and in many instances danger incurred was from dirt in clothing. It is safe to wait 24 to 48 hours after injury for developments. If a chest is opened and a positive pressure apparatus not available, patient is liable to develop mediastinal flutter and die. In case of mediastinal flutter apply positive pressure, ether by tube method and nitrous oxide and oxygen. In open chest wounds seepage of blood through mediastinum and hemorrhage of lung are rare. In rapid sucking wounds of the chest it is infrequent for the lung to fill the hole, but if lung does fill the gap it is better to leave it undisturbed than to subject patient to additional risk. Bilateral wounds are very dangerous and a collapse of both sides produces fatality. In case of collapsed lung either post-operative or from injury, symptoms are the same, fixed diaphragm, cyanosis, fast pulse, no breath sounds. For foreign body a bronchoscopy is better than cutting down on lung. Pleural epilepsy is very rare. Complications are infarct and empyema. Pulmonary abscesses are rare. Secondary hemorrhage may occur in two or three days or even two weeks after operation. Let patient rest 24 hours and tap to relieve distress. In some cases infarct is mistaken for bronchopneumonia, impression that of lobar pneumonia which is a common complication. There are three things to consider in chest operations,—preparation, anesthesia and location. General anesthetic is better than local in chest wounds low on chest wall. Transverse incision in area of diaphragm if chest wall is to be entered, lay flap back, remove the rib and make incision through periosteum. Another method is incision between ribs and use of rib spreader.

DR. HARDY stated that empyema must be very rare following hemothorax and that evacuation of blood from lung is not necessary. Rest gives good results and in case of mediastinal flutter, turn patient on stomach.

DR. GOODWIN presented three cases of fracture of os calcis. In presenting these cases and showing actual results, he stated that in many cases the x-ray shows only a single fracture, where incision will reveal many pieces of free bone. Most of these particular fractures are received in falls. First patient fell from a house two years ago, could not step without pain, not able to rest at night and was losing weight. Incision was made, bones adjusted, triple arthrodesis done, cast applied. Now the patient has relief, goes to his work, is having no pain, feels a little tired after days work. The second case of comminuted fracture of right os calcis, seen six months after injury. A triple arthrodesis was done, patient now going about work, pain relieved. Third case (B-4347) admitted January 29, 43 days after injury. Bilateral fracture of os calcis. Triple arthrodesis was done on right foot and foot placed in cast Feb. 14. Incision into left foot Feb. 23, revealed astragalus jammed down to sole of foot, free pus in body of astragalus and os calcis, many free pieces of bone in tarsal region. All remains of articulation were removed, the foot placed in the best functioning manner, wound closed and case applied. On March 16 triple arthrodesis was done and short leg cast applied. Patient dismissed from hospital April 8.

DR. RAMEY has seen many cases, which if allowed to go untreated will result in ugly deformity feet turned out, tibia pushed down in inner side, feet weak and painful. Much more simple to treat these injuries at once. Under anesthetic, if much deformity, lengthen the tendo--achilles, pull os calcis down, invert the foot and place in cast, with good results.

DR. GOODWIN said that if the fracture is linear it is a simple matter to lengthen the tendo-achilles but when the fracture is in the joint, greater difficulty is encountered and a cast will not relieve the pain.

STAFF MEETING OF HOTEL DIEU (El Paso), May, 1931.

DR. J. L. GREEN presented a case of lobar pneumonia complicated by acute empyema. (This case with its discussions is published elsewhere in this issue.)

DR. MURPHY presented a case of intussusception, an infant, age two months, who became ill 24 hours before admission to hospital, with nausea and vomiting. A physician was not consulted until child had been ill 20 hours. Admitted to the hospital with a temperature of 105, pulse 140, respiration 28. Physical examination revealed a tumor mass in the right side. Operation revealed the small bowel invaginated into the large bowel, appendix also carried in. Mass reduced by compression at the left end, pulling on small bowel not effective. Patient's condition bad on account of dehydration and duration of illness. Oxygen given without results, patient died in short time.

DR. BAKER discussed a case of a patient who had been treated previously to admission to hospital, gunshot wound of leg, left calf. Bullet passed through and through the calf of the leg and a gauze drain had been used. A larger incision was made at the point of entrance and exit down through the fascia, wound irrigated thoroughly and rubber drains were left in. Temperature ranged from 101 to 102, infection well developed and inflammation spread to the knee, efforts to check it were unsuccessful and patient died.

A second case of a gunshot wound of left chest and abdomen was discussed by Dr. Baker. Bullet entered posteriorly about the 10th rib below angle of scapula and wound of exit just lateral to midclavicular line and 4 cm. below costal margin, the 10th rib was fractured. Spleen cut about half in two by the bullet and free bleeding into abdominal cavity. Patient's condition did not permit removal of spleen, developed peritonitis and died on the 4th day.

A third case presented by Dr. Baker was that of a case of lobar pneumonia who had been ill ten days before admission to hospital. Pulse irregular, respiration rapid and noisy; on account of this it was difficult to get heart sounds. Temperature practically normal on admission, shot up to 104 and patient died in 12 hours.

CASE OF EPISTAXIS LASTING A WEEK

(Continued from page 535)

the reds are not given. It is probably a secondary anemia. It is not uncommon to have hemorrhages of this sort in either aneurism or mediastinal tumor. The marked increase in blood urea nitrogen was no doubt a terminal thing.

Without further discussion I should like to venture a diagnosis of—first, mediastinal tumor, or retromediastinal tumor; second, aneurism of the descending aorta. Secondary anemia.

Discussion by Fred C. Jordan, M. D., Phoenix

This is undoubtedly a nephritic death. What type of nephritis did he have? While the past history is very vague, he must have had a nephritis for a long time. It is not uncommon for an acute nephritis to follow a thorough chilling of the body and if there is an old nephritis, it may become distinctly aggravated and uremia may ensue. The dull pain in the thoracic portion of the back was probably due to a pericarditis which is not uncommon in nephritis.

In chronic glomerular nephritis, third stage, you would expect symptoms very similar to these, though usually more albumen and casts are found in the urine. This type of nephritis may or may not be associated with edema and practically always terminates in uremia. The blood pressure is always high; the pressure in this case (158/90) is considerably lower than we would expect in any nephritis with a terminal uremia.

Arteriosclerotic nephritis; we would not expect this type in a man of 29; the blood pressure is not as high as usual and you would expect more signs of cardiac failure.

The blood picture is that of a secondary anemia which could be due to continuous epistaxis, or the anemia associated with a chronic nephritis. Positive blood in the vomitus and no free Hcl in gastric juice might suggest carcinoma or pernicious anemia, but the age of the patient, lack of gastric symptoms and negative blood picture should rule out these two diseases.

Acute nephritis with uremia should give urine loaded with albumin and casts. Acute yellow atrophy of the liver may cause epistaxis, headache, delirium, insomnia, severe muscular twitching. It is a rare disease and negative stool examinations should rule it out.

My diagnosis is uremia, chronic glomerular nephritis; probably pericarditis.

Pathologic Discussion by S. Burt Welbach, M. D. Boston

ANATOMIC DIAGNOSES

Chronic glomerular nephritis.

Bronchopneumonia.

Our diagnosis was chronic nephritis. It was the end result of one or two or numerous exacerbations of glomerular nephritis. There was moderate bronchopneumonia. Most of the lung lesions had the characteristics of those produced by hemolytic streptococci.

BOARD OF MEDICAL EXAMINERS OF THE STATE OF ARIZONA

The following are the names of the applicants for examination and reciprocity, acted upon favorably by the Arizona State Board of Medical Examiners, at the meeting of October 6th and 7th, 1931. There were 14 applicants for examination, 12 of whom passed. They are:

Dr. Richard Leslie Ward, a graduate of the College of Medical Evangelists, 1930. Dr. Ward is to be located at Buckeye, Arizona.

Dr. David B. Snelling, a graduate of the Harvard Medical School, 1929. Dr. Snelling is to be located at Tucson, Arizona.

Dr. Frank Milton Kilgard, a graduate of the University of Illinois, 1929. Dr. Kilgard will be in Phoenix, Arizona.

Dr. Melvin Lloyd Kent, a graduate of the University of Louisville, 1930. Now located at Mesa, Arizona.

Dr. Peter Bowen Hoover, a graduate of Indiana University School of Medicine, 1930, will be in Phoenix, Arizona.

Dr. Donald Frederick Hill, a graduate of the University of Cincinnati Medical College, 1929. Dr. Hill is to be located at Tucson, Arizona.

Dr. Kenneth A. Herbst, a graduate of the University of Minnesota Medical School, 1930. Dr. Herbst is to be located at Springerville, Arizona.

Dr. William Roy Hewitt, a graduate of the Rush Medical College, 1931. Dr. Hewitt is to be located at Tucson, Arizona.

Dr. Harry E. Gerner, a graduate of the University of Marvland School of Medicine, 1930. Dr. Gerner is to be located at Tucson, Arizona.

Dr. Palmer Dysart, a graduate of the Northwestern University of Medical School, 1930. Dr. Dysart will be located in Phoenix, Arizona.

Dr. David E. Brinkerhoff, a graduate of the

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Stanford University School of Medicine, 1929. Dr. Brinkerhoff will be located in Phoenix, Arizona.

Dr. Austen G. Allen, a graduate of the University of Toronto, 1931. Dr. Allen is to be located at Tucson, Arizona.

The following applicants were licensed to practice in Arizona by reciprocity:

Dr. Milton C. Wiggins, a graduate of the University of Tennessee, 1915, now located in Paris, Tenn. By reciprocity with Tennessee.

Dr. Francis Tweddell, a graduate of the College of P. & S., Columbia University, 1907, now located at Plandone, N. Y. By reciprocity with New York.

Dr. Henry Stidham of Safford, Arizona, a graduate of the College of P. & S., Little Rock, Arkansas, 1919. By reciprocity with Arkansas.

Dr. Leon Thayer Stem, a graduate of the University of Tennessee, 1909, now located at Chattanooga, Tenn. By reciprocity with Tennessee.

Dr. William R. Lyon, a graduate of Jefferson Medicine College, 1895. Now located at Glenfield, Pennsylvania. By reciprocity with Pennsylvania.

Dr. Julius G. Kelley, a graduate of Tufts Medical School, 1924. Now located at Pocasset, Mass. By reciprocity with Mass.

Dr. Harry S. Jones, a graduate of Starling Medical College, 1895. Now located at Ash Fork, Arizona. By reciprocity with Ohio.

Dr. Charles N. Greusel, a graduate of Creighton Medical College, 1910. Now located at San Bernardino, California. By reciprocity with Montana.

Dr. Frank W. Gale, a graduate of Beaumont Medical College, 1900. Now located at Tucson, Arizona. By reciprocity with Missouri.

Dr. Harry LeRoy Franklin, a graduate of Tulane University Medical School 1917. Now located at Phoenix, Arizona. By reciprocity with California.

Dr. William Leslie Bell, a graduate of the Medical Department University of California, 1898. Formerly located at Oakland, California. By reciprocity with California.

B. M. BERGER, Sec'y.

DALLAS SOUTHERN CLINICAL SOCIETY NEWS

Throughout the summer, the Executive Committee of the Dallas Southern Clinical Society has held weekly meetings perfecting plans for the society's Fourth Annual Spring Conference to be held in Dallas March 28 to April 1, 1932, inclusive. Preparations are already far in advance of those for last year. This society, whose sole purpose is to make available to the doctors of the South the post-graduate teaching material of Dallas, has held three notably successful annual meetings which have occasioned much favorable comment. The attendance last year was just short of 1,200, and plans are being made to entertain at least 2,000 in 1932.

Twenty of this country's most distinguished medical teachers have accepted invitations to appear in General Assemblies, Hospital Clinics, and Round Table Luncheons. Ninety-six hours of post-graduate teaching have been arranged in courses in limited groups. Elaborate Scientific and Technical Exhibits, motion pictures and other attractive features are being planned. The Dallas Southern Clinical Society extends a cordial invitation to all of the doctors of the South and Southwest to be present March 28 to April 1, 1932.

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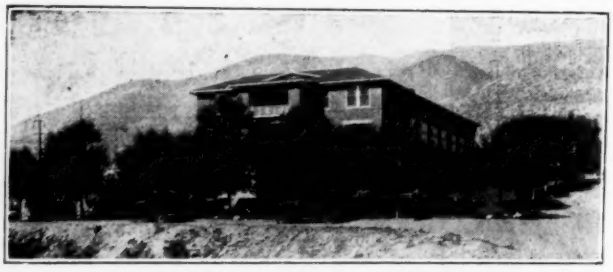

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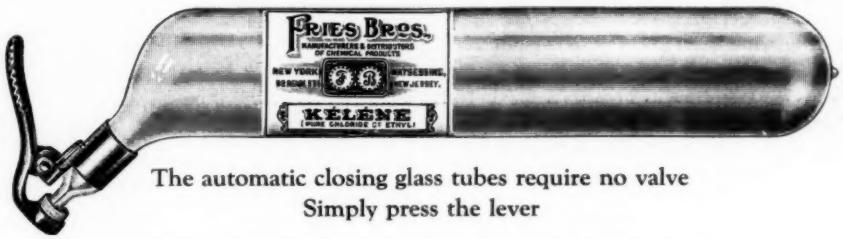

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THE DALLAS SOUTHERN CLINICAL SOCIETY

Will hold it's Fourth Spring Clinical Conference in Dallas, March 28 to April 2, 1931, inclusive.
FEATURES:—20 DISTINGUISHED GUEST SPEAKERS.

Dr. Thomas McCrae, Philadelphia.
(Internal Medicine.)
Dr. Samuel A. Levine, Boston.
(Cardiology.)
Dr. Albert H. Rowe, Oakland, Calif.
(Allergy and Endocrinology.)
Dr. Thomas R. Brown, Baltimore.
(Gastro-enterology.)
Dr. Joseph Collins, New York City.
(Neurology-psychiatry.)
Dr. Udo J. Wile, Ann Arbor, Mich.
(Dermatology.)
Dr. McKim Marriott, St. Louis.
(Pediatrics.)
Dr. Lee W. Dean, St. Louis.
(Pediatric Oto-laryngology.)
Dr. Joseph Beck, Chicago.
(Oto-laryngology.)
Dr. Wm. L. Benedict, Rochester, Minn.
(Ophthalmology.)
Dr. Frank L. Lahey, Boston.
(General Surgery.)
Dr. J. Shelton Horsley, Sr., Richmond, Va.
(General Surgery.)
Dr. Carl Hedblom, Chicago.
(Chest Surgery.)
Dr. William O'Neill Sherman, Pittsburgh.
(Industrial Surgery, Orthopedics.)
Dr. Paul Titus, Pittsburgh.
(Obstetrics.)
Dr. Edward H. Richardson, Baltimore.
(Gynecology.)
Dr. Herman L. Kretschmer, Chicago.
(Urology.)
Dr. Dudley A. Smith, San Francisco.
(Proctology.)
Dr. Merrill C. Sosman, Boston.
(Radiology.)
Dr. John A. Kolmer, Philadelphia.
(Clinical Pathology and Immunology.)

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"The nearer the milk administrated to the artificall fed infant approaches human breast milk in composition and sterility, the nearer the artificially fed infant approaches in its general resistance and condition that of normal nurslings."

This statement written by a member of the White House Conference presents accurately the idea back of S. M. A., an infant food developed at the Babies and Children's Hospital of Cleveland, Ohio. S. M. A. is regarded by many physicians to be the closest approximation to mother's milk in existence.

It resembles breast milk, having the same percentage composition and in addition, the same buffer value, depression of freezing point, specific gravity, hydrogen ion concentration and caloric value. It is also interesting to note that the fat in S. M. A. has the same character numbers as breast milk fat, such as Polenske, Iodine, Reichert Meissel, Saponification, Melting Point and Refractive Index. Sufficient cod liver oil is incorporated in this fat to make it anti-rachitic.

Like breast milk, S. M. A. is used without medification for the normal, full term infant with excellent results in most cases.

The tuberculin tested cow's milk used as a basis for the production of S. M. A. is under the strict supervision of both Cleveland and Chicago Boards of Health.

Special Food for Premature Infants.

For premature infants, and to correct diarrhea and malnutrition, Protein S. M. A. (Acidulated) is recommended. This is a special form of S. M. A. high in protein and low in fat and carbohydrate, with a relatively high acidity. The same antirachitic fat is present supplying vitamin "D," and it contains enough lemon juice to make it anti-scorbutic as well.

Develops Non-Allergic Milk.

For infants, children and adults sensitive to milk protein, the S. M. A. Corporation has produced a non-allergic cow's milk, (SMACO 300). Excellent results have been reported.

SOME BONE CHANGES PRODUCED BY DISEASES OF THE HEMATOPOIETIC SYSTEM. J. W. Pierson, M.D., Baltimore. Sou. Med. Jour., 24:191 (March, 1931).

Of the anemias, the congenital forms produce the most interesting bone changes, the result of chronic overstimulation of the bone marrow. The great increase in the number of young red blood cells in the bone is accompanied by a hyperplasia which causes the bone marrow to swell, producing increased pressure on the cortex; the cortex becomes thin and allows the bone to expand, registering on the roentgenogram by increase in size of the shaft of long bones and depth of flat bones. The bones appear to be more porous than normal and present a very mottled appearance. Late in the disease when the bone marrow is replaced by new bone, striations are seen in the marrow cavity of long bones. In leukemia, where the bone marrow fat is largely replaced by new blood cells, the roentgenograms show areas of lessened density giving a mottled appearance to the marrow cavity; the cortex is thinner than normal and the periosteum elevated; the picture is somewhat similar to that found in the anemias. In Hodgkin's disease sometimes striking changes in bones are found; the bones begin to

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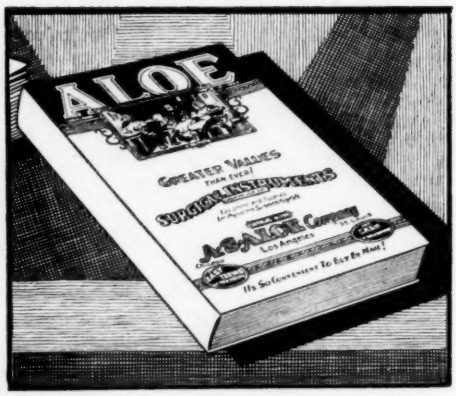

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change their appearance when the fibrotic stage is reached, at which time they are quite porous and give mottled appearance; later areas of necrosis are represented by numerous discrete areas of lessened density scattered throughout the caseous system. At times a large area of bone destruction is found resembling neoplasm. In Gaucher's disease, the course is very chronic and various stages of bone change may be found. The replacement of the normal by abnormal cells is indicated by areas of increased density, with increase in diameter of long bones, of depth in flat bones and of vertebral bodies; periosteum is thickened, and the picture may be confused with osteomyelitis (chronic).

In many of these cases, all factors must be considered in order to make a correct differential diagnosis.

UROSELECTAN, A RADIOLOGICAL AND UROLOGICAL STUDY. Bransford Lewis, M.D., B. Sc., F.A.C.S., Grayson Carroll, M.D., F.A.C.S., and Martyn Schattyn, M.D., A.B., St. Louis. Sou Med. Jour., 24: 206, (March, 1931).

Cystoscopic urography is not always practical and the method of examination by uroselection is supplementary. Each method of examination has its place. Cystoscopic technic gives roentgenograms which are superior to those following uroselectan; their evidence is positive while that of uroselectan; is negative. In the technic, the patient drinks freely of fluids the day before injection and the intestines as free from contents as possible. Take a "flat" roentgenogram before the injection. The technic advised by the authors of this method is followed, except that the time is reduced to ten minutes. From three to five roentgenograms are taken according to the requirements of the case. It has been shown that normally 90 per cent of the uroselectan injected is eliminated by the kidneys, 60 per cent in the first two hours, 25 per cent in the next four hours, which facts may be utilized in making roentgenograms. A child of seven years receives one-half and one of two years one-fourth the adult dose. There is no object in dividing the dose between the two arms as suggested by some. Six cases are cited.

LIMITATION OF THE MANUFACTURE OF NARCOTIC DRUGS. In accordance with the provisions of the Hague convention of 1912, Congress made laws for controlling and regulating the production of and the traffic in the drugs mentioned by the convention. Now domestic production and traffic in these dangerous drugs is limited by federal law. The importation of opium and coca leaves into the United States is restricted. The enforcement of the laws have, however, not prevented the importation of drugs for illicit uses. Introduction of narcotic drugs by smugglers cannot be prevented until other countries control the manufacture and export of narcotic drugs adequately. To this end our government initiated the movement which resulted in the calling of the International Opium Commission at Shanghai in 1909 and since then has continued in its efforts along these lines. The manufacture of narcotic drugs must be limited to approximate medicinal and scientific needs. Physicians must aid in the determination of such needs by limiting their own prescribing to indispensable uses. The pitiful character of the drug addict and the association of drug addiction with crime and other menaces to the public welfare demand all the help that physicians can give in solving this problem. (Jour. A.M.A., May 9, 1931, p. 1623.)

LEUKOPLAKIA BUCCALIS: A STUDY OF EIGHTY CASES. Howard King, M.D., and C. M. Hamilton, M.D., Nashville, Tenn. Sou. Med. Jour., 24: 380, (May, 1931.)

Leukoplakia rarely occurs in youth. Tobacco is the most prevalent etiologic factor, syphilis playing a minor role. It is resistant to treatment. Leukokeratoses are removed by electrocoagulation, the radium plaque not being used at present, having been tried and found unsatisfactory. This seems strange because the best results on lip lesions have been secured with x-ray, giving from three to five skin units. Where carcinoma has developed, they were irradiated with radium and destroyed by electro-coagulation immediately afterwards. Mild lesions of leukoplakia over large areas should not receive strong applications.

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Not all infants require vitamin B supplements, but when the infant needs additional vitamin B, this product supplies it together with carbohydrate. In other cases, the carbohydrate of choice is Dextri-Maltose, No. 1, 2 or 3.

HOW TO CORRECT DIARRHEA

After a starvation period of twelve to twenty-four hours on boiled water or gelatin water (⅛ oz. of gelatin to one pint of boiled water), the infant should be given Protein S. M. A. (Acidulated) diluted 4 level tablespoons with 9 ounces of water and without any additional carbohydrate.

	1st Day	2nd Day	3rd Day*
Severe cases	3 oz.	6 oz.	9 oz.
Medium cases	10 oz.	15 oz.	20 oz.
Mild cases	15 oz.	30 oz.	

After 48 hours or when the stools become normal, SMACO (400) Maltose and Dextrins (Spray Dried) should be added gradually, beginning with one oz. to the quart, and increasing until the infant is gaining steadily in weight. In certain cases, it may be necessary to increase the carbohydrate to a total of 12 to 15% (3 to 4 oz. of carbohydrate to the quart).

* Until the proper amount for their age and condition is reached, which is 200 c.c. per kilo of body weight per twenty-four hours, or three ounces per pound of body weight per twenty-four hours. However, the total twenty-four hour intake need not go above thirty-two to thirty-five oz. or 960 to 1050 c.c.

THE ROBINSON CLINIC

Brain tumors are more prevalent than the profession realizes. Routine autopsies performed on all patients who die in the City Hospital in Vienna showed that one out of four thousand cases had some type of cranial neoplasm. In other words, in every community of ten thousand people, there are at least two people suffering from a brain tumor.

With this fact in mind, every effort should be made to diagnose and localize these tumors before it is too late, always remembering that few cases are typical until after the optimum operative period has passed.

The classical triad of headache, vomiting and choked disc is seldom found in entirety The presence of one of these conditions with gradually progressing neuro-logical symptoms, is sufficient to warrant the diagnosis of potential tumor, and every step should be taken to determine the presence and location of a tumor mass.

Surgery is the only adequate therapy. X-ray should never be used until after operation, as some types of glioma are activiated by radiation and in all types, oedema is produced, that will invariably aggravate the patient's symptoms and may even cause death.

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